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It's Important to 'Know In Time'

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The Newspaper of the Industry

Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory — An International Institution — Subscribers All Over the World — Technical Governmental

Reentered as second-class matter October 3, 1936 at the post office at Detroit, Michigan, under the Act of March 3, 1879.
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'Written To Be Read on Arrival'

Issued Every Monday at Detroit, Michigan

SEPT. 13, 1943

Vol. 40, No. 2, Serial No. 756
Established 1926.

Inside Dope

By George F. Taubeneck

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Sabotage?
Home Front Better
Amateur Diplomacy
Postwar Employment
Refrigerated Cargo Planes

Watch Your Inventories

Again we warn: Watch your inventories! The CMP plan is working more smoothly than most manufacturers had expected, and your fears of being caught short of materials should be materially lessened. On the other hand, if your stockpiles are excessive at the war's end, you'll be liable for huge losses.

A sudden end to the war in Europe would catch some contractors with their pants down when contracts are cancelled. Priorities Regulation No. 1 means what it says, and will be strictly construed by government negotiaters.

PR No. 1 says inventories must be kept to a minimum level necessary to meet deliveries—no matter how difficult strategic materials may be to obtain.

When the war in Europe terminates there should be large excesses of material available. Prices may drop sharply.

Electronics

One crowd that does not need to worry about contract cancellations is the group of manufacturers making electronic devices. The demand is for more and more.

Production of secret weapons based on electronic devices may be expected to be upped as much as 40% in 1944 over 1943's fantastic orders. "Electronics will lick the Japs," one hears.

And from electronics will come many of the new products specialty dealers will be selling a year or so after the Japs have been crushed.

Paper Prospects

Good news for all users of paper is the designation of Harold Boeschenstein, who made CMP work, as coordinator of WPB divisions handling paper and papermaking materials.

WPB now regards paper as one of its most pressing problems. If Boeschenstein can dig himself out of this mess, he'll be saluted everywhere as a genius—especially by the publishing industry! But if anybody can do it, he can.

Another very capable WPB executive, Charles E. Adams, has been named acting chairman of an international fact-finding committee to ascertain and report on requirements, supplies, uses, production and distribution of pulp and paper products in the United States, Canada, and Great Britain.

Victory Through Air Power

Although Alexander de Seversky's "Victory Through Air Power" was frowned upon by high authorities at the time of its publication, history may reveal that the de Seversky-Billy Mitchell doctrines profoundly influenced Churchill-Roosevelt.

The "Air" has so far progressed that it may even get that long-sought Separate Command in America. And certainly it will get its chance to prove that bombardment can win the war.

(Concluded on Page 12, Column 1)

Draft Boards To Refer To U.S.E.S. On 'Critical' Men

Authority to Induct Men on Skilled Workers List Is Sharply Curtailed

WASHINGTON, D. C.—Authority of local draft boards to order the induction of men in the 149 high-skill jobs recently designated as "critical occupations" to give them super-eligibility for extended occupational deferment, was restricted sharply in an order from Selective Service headquarters dated Sept. 6.

("Refrigerator repairmen" and "refrigerator engineers" are included on this "super-deferment" list of 149 occupations.)

The local draft boards, which hitherto have had full control over the case of each individual, subject only to rulings by the Appeals Board, were forbidden to order the induction of any man with the required skills without first referring the case to the United States Employment Service.

Furthermore, the boards were ordered to refer the case to the U.S.E.S. even if an Appeals Board has agreed with them that the particular man does not rate occupational deferment despite his qualifications to fill a "critical occupation."

In doing so, they must give the man at least a 30-day postponement of induction, and then, if the U.S.E.S. directs it, reconsider his case and give "the most serious consideration" to granting him the deferment it has previously refused.

Since the Selective Service Law vests full authority in the board over each case, except when an Appeals

(Concluded on Page 28, Column 1)

WPB Rejects Pleas For Washers Now

WASHINGTON, D. C.—Resumption of washer manufacture to meet essential civilian needs cannot be considered until the allotment of critical materials for the first quarter of 1944 is made, representatives of the War Production Board's Office of Civilian Requirements told washer industry representatives who came here with a plea and a plan to start production.

WPB indicated, however, that it was interested in the washer industry's proposal to increase by at least 50% allotments of critical materials for the manufacture of spare and repair parts for existing machines. Producers say that supplies

(Concluded on Page 6, Column 1)

Frigidaire Shifts Lehman & Clark

DAYTON, Ohio—Announcement is made by P. M. Bratten, general sales manager, Frigidaire Division, General Motors Corp., of the appointment of H. F. Lehman as assistant general sales manager in charge of appliance and commercial sales and service departments, and L. A. Clark as assistant general sales manager responsible for all advertising, sales promotion, training, and other related activities.

Mr. Lehman formerly was manager of the Frigidaire commercial and air conditioning sales division and Mr. Clark's former position was advertising and sales planning manager.

Sanger Heads G-E Appliance Sales

ALFRED C. SANGER

* * *

BRIDGEPORT, Conn. — Alfred C. Sanger has been named sales manager for the appliance division of General Electric Co.'s appliance and merchandise department, according to Hardage L. Andrews, vice president in charge of the department.

Previously Mr. Sanger has been manager of G-E's traffic appliance division, supervising the manufacture, engineering, and sales of heat-

(Concluded on Page 28, Column 2)

If You Have a Problem Of Refrigerant Change, Read This Issue

Published in this issue are three authoritative articles on the proper use of methyl chloride refrigerant — particularly as it concerns "change-overs" to methyl chloride from a system which has been using "Freon."

On pages 8 and 9 there is a frank discussion of the hazards of methyl chloride, and how best to avoid and counteract them. This was written by Dr. W. O. Walker, director of research, Ansul Chemical Co., a producer of methyl chloride.

P. B. Reed, who authors the regular feature "Army Refrigeration Problems," writes on the field problems involved in making "change-overs" on pages 10 and 11.

Two officials of Buensod-Stacey, Inc., New York City, one of the country's largest air conditioning contracting firms, point out the dangers to the industry if the matter of change-overs is mishandled, and recommend strict adherence to established codes, in an article on page 18 and 19.

Chicago Code Director Asks Industry Not To Relax Its Standards of Safety

City of Chicago
Department for the Inspection
Of Steam Boilers, Unfired
Pressure Vessels and
Cooling Plants

Editor:

It was indeed gratifying to a public safety office to see your warning regarding the substitution of refrigerants in existing systems on the front page of your Aug. 30 issue.

Early in the summer this department foresaw the possibility of such accidents, and issued regulations requiring that a permit be obtained before the refrigerant in any system is changed. The manufacturers, contractors, and jobbers cooperated fully with the department and we have had no trouble in this respect.

As you are aware, the Chicago Code is quite liberal in allowing methyl chloride refrigerating systems in their proper applications, and experience has shown that this refrigerant can be classified with others as a safe refrigerant.

However, many factors enter into the substitution of refrigerants in existing systems, and it is a very dangerous procedure to allow such substitutions without full knowledge of the hazards involved. The suitability of the materials used for the refrigerant-containing parts, the proper adjustment of safety devices, location of the unit and piping, the proper exits, methods of ventilation, etc., all play an important part in the furtherance of public safety.

The present job of the refrigeration industry, after the military needs are taken care of, is the preservation of food, as has been repeatedly stated in your paper.

The information that this department receives is that there is a liability of a further shortage of all refrigerants, and while we all enjoy the benefits of comfort cooling, it is apparent that this application of refrigeration is not nearly as important as the preservation of food.

I note that in your next regular issue that you hope to present complete data on rules to be followed, precautions to be taken, and "don't's" to be observed in making changeovers.

In view of the dangers, as evidenced by the accidents that have recently happened, I would recommend that one of your "don't's" be:

"An irritant, flammable, or toxic refrigerant should not be used in direct expansion refrigerating systems used for comfort cooling."

GERALD GEARON,
Supervising Mechanical Engineer
and Chief Deputy Inspector

Change In Freon Order Is Aid To Industrial Users

Supply Available in Field For 27 Types of Jobs; Other Changes Listed

WASHINGTON, D. C.—The new amendment to the "Freon" order M-28 in general makes the following significant changes in the order:

(1) Establishes a list of 27 applications of refrigeration and air conditioning equipment for which "Freon" may be obtained by a user from any supplier, without a specific authorization from the WPB.

(2) For certain of these 27 applications a "standby" charge may also be obtained without special authorization. For the remainder of the 27 applications only a "minimum operating charge" can be obtained in this manner.

(3) The refrigerant "Freon-11" (monofluorotrichloromethane) may now be obtained by a simple certification to a supplier of "Freon" in the field, a specific authorization being needed only for List B installations. This change has been made because "Freon-11" is a by-product of "Freon-12" and its production does not lessen the output of "Freon-12."

(4) In their certification to the seller, users must henceforth certify that "Freon-12" is being purchased for immediate use, instead of within a 30-day period.

Sterling Smith, Chief of the Refrigeration Section of WPB, and Administrator of the "Freon" order, has been able to get and ship to the field special, extra allotments of "Freon-12" for the Class IV (b) allotment, in which the 27 specially listed applications are included.

The fact that these special concessions for "Freon" for industrial usese were obtained at a time when the demands on it for military use are most imperative shows that the industry has received a smashing recognition of the vital way in which its products are being put to use in industry.

It was apparent that Washington officialdom not familiar with the field had been inclined to pooh-pooh these applications until the "Freon" shortage brought a hue and cry from the field that could not be denied.

The amended order requires purchasers and users of "Freon-12" for ship building operations to make separate authorization application giving specific data on its proposed use.

The following are the 27 applications and special usese for which "Freon" can be obtained direct from a supplier:

Air Conditioning

1. Air conditioning equipment in crane cabs.
2. Air conditioning in communi-

(Concluded on Page 2, Column 1)

Jones Directs Sales For Cutler-Hammer

MILWAUKEE — P. S. Jones has been appointed general sales manager of Cutler-Hammer, Inc. here, and will have direct supervision of sales through the company's 30 selling territories. For 14 years Mr. Jones had been in charge of the New York sales territory.

After joining Cutler-Hammer in 1915 as a sales engineer at Milwaukee, Mr. Jones went to the Pittsburgh office in 1919, later becoming branch manager there. He was graduated from Ohio State university in 1915.

Amended 'Freon' Order Permits Direct Supplying For 27 Industrial Uses

(Concluded from Page 1, Column 5)

cation rooms which are sealed, including telephone or telegraphy relay stations and exchanges and control rooms of radio stations, if no other rooms are conditioned by the system.

3. Air conditioning to maintain prescribed conditions in laboratories where the tests being conducted are directly concerned with the production of parts or instruments for aircraft, combat tanks, ships, radio and radar equipment, and other military combat equipment.

4. Air conditioning for temperature and humidity control in the production of gyroscopic instruments and compasses.

5. Air conditioning for temperature and humidity control in the production of turbo superchargers.

6. Air conditioning for temperature and humidity control in hospital operating rooms.

7. Air conditioning for humidity controls in annealing furnaces.

8. Air conditioning for temperature and humidity control in electrodrying of aluminum castings containing a percentage of magnesium (including standby charge).

9. Air conditioning for humidity control for production of optical products going into the production of fire control instruments for range finding, etc., Army and Navy telescopes, height finders, bombsights, and air borne control station computers.

10. Air conditioning for the production and storage of penicillin and blood serum (including standby charge).

Refrigeration

1. Low temperature metal shrinking cabinets.

2. Low temperature rivet storage for aircraft production.

3. Cooling of oil or other coolant in high speed machining and cutting operations in the production of military aircraft and other combat vehicles.

4. Cooling of anodizing solutions where the product produced is used directly in military ordnance material.

5. Controlling reactions in photographic solutions for the development and printing of X-ray, news, and motion picture film or prints.

6. Cooling of X-ray apparatus used in the analysis of castings in the production of aircraft and other combat vehicles, or pressure vessels.

7. Cooling of rollers or mixers in the production of synthetic rubber.

8. Low temperature cabinets for the testing of combat instruments.

9. Variable temperature cabinets for the testing of radio sending and receiving sets for installation in military aircraft or other combat vehicles or portable radio transmitter-receiver sets for miltary use.

10. Variable temperature cabinets for the testing of radar equipment for installation in military aircraft and Navy vessels.

11. Low temperature chambers designed to duplicate substratospheric conditions for the testing of instruments, flying clothes, personnel, and equipment.

12. Refrigeration for the production and storage of penicillin and blood serum (including standby charge).

13. Refrigeration for the storage of blood for plasma, production of blood plasma, and storage of blood plasma (including standby charge).

14. Refrigeration for cooling of welding tips used on spot-welders in the production of military aircraft.

Special Uses

1. Testing of coalxial cable.

2. Cooling of transformers where no refrigeration equipment is involved in the process.

3. Charging of gas filled condensers for radio frequency equipment.

Text of the recently amended parts of Order M-28 are as follows:

Amendment 1 to Conservation Order M-28 as amended Aug. 7, 1943

Chlorinated Hydrocarbon Refrigerants

Section 1226.27 — Conservation Order M-28 as amended Aug. 7, 1943, is hereby amended in the following respects:

1. That part of paragraph (b) which defines sub-classification (b) of Class IV is amended to read as follows (leaving the remainder of the paragraph unchanged):

(b) * * *

Class IV

* * * * * * * *

(b) For maintenance of the specified refrigerating and air conditioning systems and special uses, as described on List C.

* * * * * * *

2. That part of paragraph (c) which defines the form of certification to be furnished by users is amended to read as follows (leaving the remainder of the paragraph unchanged):

(c) * * *

(1) * * *

The undersigned purchaser hereby certifies to the seller and to the War Production Board that he has no empty or surplus cylinders, and that the refrigerants covered by this order are required for immediate use for the following purposes, as classified in Conservation Order M-28:

Classification

(Here list classifications included in the purchase order, and the specific use if in Class IV.)

Quantity Required

(Here list minimum operating charge, in pounds, ordered for each classification, and for each specific use if in Class IV.)

3. Subparagraph (d)(3) is amended to read as follows:

(d) * * *

(3) Deliveries of dichlorodifluoromethane (sometimes called "F-12") after September , 1943, for uses in (c) of Class IV and (a) and (b) of Class III.

(i) Dichlorodifluoromethane (or "F-12") will not be allocated for the uses included in part (c) of Class IV, or in parts (a) and (b) of Class III, by means of regular monthly deliveries to suppliers.

(ii) Instead, in the event a system of any type which is included in Class IV (c) should become inoperative for lack of the refrigerant, a separate application for the refrigerant must be made by the owner of the system, directly to the War Production Board, General Industrial Equipment Division, by letter, telegram, or other communication, stating (a) whether the system is used for air conditioning or refrigeration, (b) its size or capacity by horsepower or tons of refrigeration, (c) the minimum operating charge necessary to restore the system to operation, (d) why conversion to another type of refrigerant is not practicable, (e) the functional use of the system in the plant, and (f) the end product being processed by its use. If the application is granted, the Board will issue a specific direction to the producer authorizing and directing delivery of a specified quantity to be made to the owner of the particular system for the use specified. No user, supplier, or other person shall deliver any dichlorodifluoromethane (or "F-12") to the owner of such a system unless and until the Board has specifically directed such delivery to be made.

(iii) An equipment manufacturer who needs dichlorodifluoromethane (or "F-12") for charging new systems for the Maritime Commission or War Shipping Administration at the factory or in the field (included in parts (a) and (b) of Class III) must make a separate application, directly to the War Production Board, General Industrial Equipment Division, by letter, telegram or other communication stating the procurement contract number, and (a) if the refrigerant is for factory charging, the minimum amount which he will need to meet his scheduled deliveries for the next month, and what part of the amount is for spare charges, or (b) if for charging in the field, the minimum amount, in addition to his inventory available for such use, which he will need during the next month to meet the ship-launching schedule. If the application is granted, the Board will issue a specific direction to the producer authorizing and directing delivery of a specified quantity to be made to the equipment manufacturer for the use specified. No person shall deliver any such refrigerant to an equipment manufacturer for such purpose unless and until the Board has specifically directed such delivery to be made.

(iv) This paragraph (d)(3) shall be followed, as long as it remains in effect, notwithstanding any other provisions of this order. However, suppliers will continue to place their orders for refrigerants, for uses described in Class III, in parts (a), (b) and (c) and Class IV in parts (a), (b) and (c) in accordance with paragraph (d). When an application is made in accordance with this paragraph (d)(3), the user is not required to furnish the certificate referred to in paragraph (c)(1).

* * * * * * * *

4. There is added at the end of the order, following "List B," a new list, reading as follows:

* * * * * * * *

LIST C: Systems and special uses, referred to in Class IV (b), for which a minimum operating charge (or the minimum quantity necessary for a special use, or for a "standby charge") of dichlorodifluoromethane (or "F-12") may be obtained by a user from any supplier, without a specific authorization from the War Production Board, if the supplier has on hand any such refrigerants which were allocated to him for uses covered by Class IV (b), or are carried over from his previous month's supply and are available for such use in accordance with paragraph (d)(4)(iv). A "standby charge" may be delivered only where specifically mentioned below. The systems covered by this list include only those which are operated for air conditioning or refrigeration exclusively for one or more of the following purposes:

Air Conditioning

1. **Air conditioning equipment in crane cabs.**
2. **Air conditioning in communication rooms which are sealed, including telephone or telegraph relay stations and exchanges and control rooms of radio stations, if no other rooms are conditioned by the system.**
3. **Air conditioning to maintain prescribed conditions in laboratories where the tests being conducted are directly concerned with the production of parts or instruments for aircraft, combat tanks, ships, radio and radar equipment and other military combat equipment.**
4. **Air conditioning for temperature and humidity control in the production of gyroscopic instruments and compasses.**
5. **Air conditioning for temperature and humidity control in the production of turbo superchargers.**
6. **Air conditioning for temperature and humidity control in hospital operating rooms.**
7. **Air conditioning for humidity controls in annealing furnaces.**
8. **Air conditioning for temperature and humidity control in electrodrying of aluminum castings containing a percentage of magnesium (including standby charge).**
9. **Air conditioning for humidity control for production of optical products going into the production of fire control instruments for range finding, etc., Army and Navy telescopes, height finders, bombsights, and air borne control station computers.**
10. **Air conditioning for the production and storage of penicillin and blood serum (including standby charge).**

Refrigeration

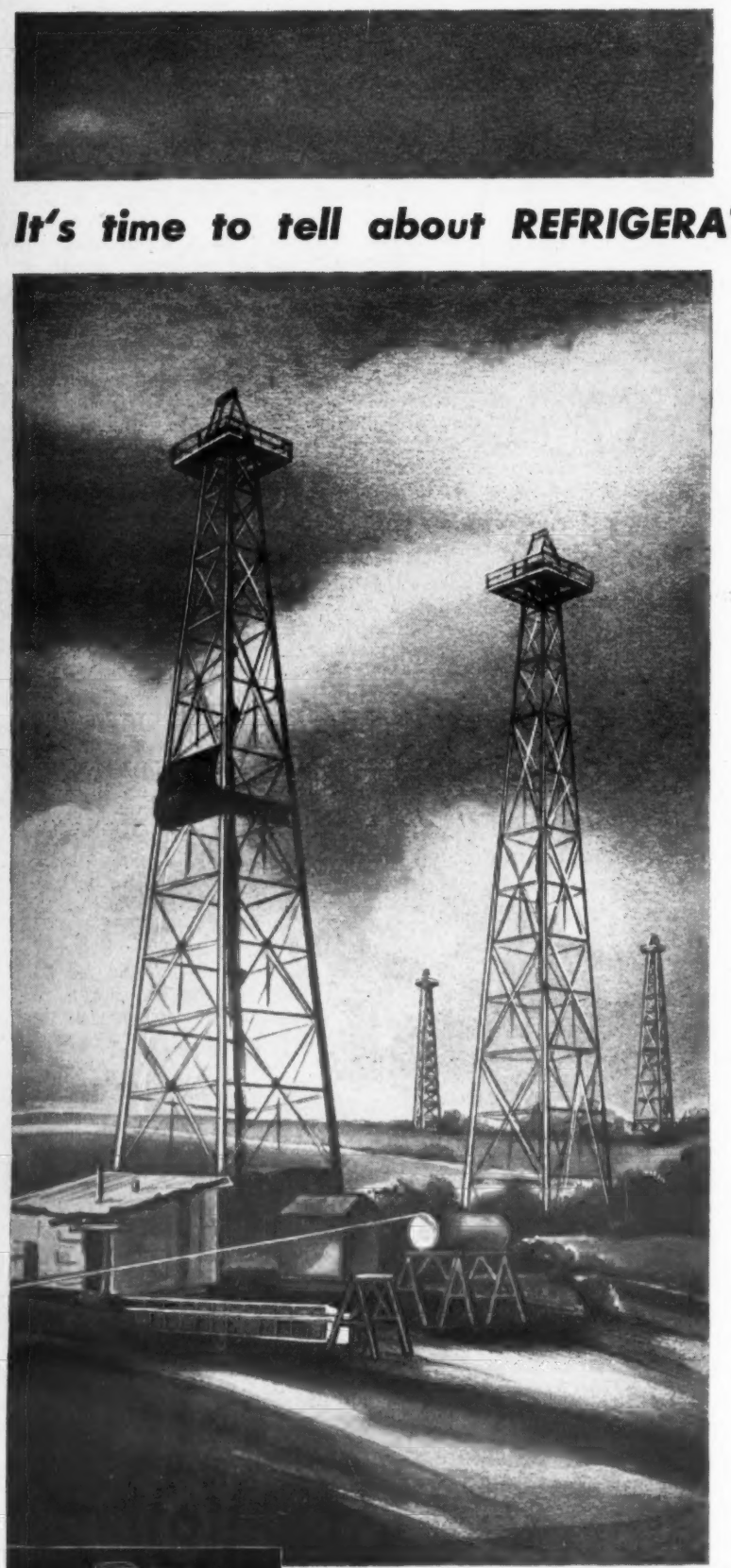
1. **Low temperature metal shrinking cabinets.**
2. **Low temperature rivet storage for aircraft production.**
3. **Cooling of oil or other coolant in high speed machining and cutting operations in the production of military aircraft and other combat vehicles.**
4. **Cooling of anodizing solutions where the product produced is used directly in military ordnance material.**
5. **Controlling reactions in photographic solutions for the development and printing of X-ray, news, and motion picture film or prints.**
6. **Cooling of X-ray apparatus used in the analysis of castings in the production of aircraft and other combat vehicles, or pressure vessels.**
7. **Cooling of rollers or mixers in the production of synthetic rubber.**
8. **Low temperature cabinets for the testing of combat instruments.**
9. **Variable temperature cabinets for the testing of radio sending and receiving sets for installation in military aircraft or other combat vehicles or portable radio transmitter-receiver sets for military use.**
10. **Variable temperature cabinets for the testing of radar equipment for installation in military aircraft and Navy vessels.**
11. **Low temperature chambers designed to duplicate substratospheric conditions for the testing of instruments, flying clothes, personnel and equipment.**
12. **Refrigeration for the production and storage of penicillin and blood serum (including standby charge).**
13. **Refrigeration for the storage of blood for plasma, production of blood plasma and storage of blood plasma (including standby charge).**
14. **Refrigeration for cooling of welding tips used on spot-welders in the production of military aircraft.**

Special Uses

1. **Testing of coaxial cable.**
2. **Cooling of transformers where no refrigeration equipment is involved in the process.**
3. **Charging of gas filled condensers for radio frequency equipment.**

P. S. JONES

Recently appointed general sales manager of Cutler-Hammer, Inc., Milwaukee.



It's time to tell about ***REFRIGERATION'S "hidden services"***

Take OIL for instance...

REFRIGERATION HAS HELPED the great petroleum industry solve some of its most perplexing problems, and plays a vital role in delivering the millions of gallons of gasoline, kerosene and lubricating oil to our Armed Forces and our immense National Transportation System.

THE COMPLETE STORY of Refrigeration's great contribution to this Industry would take a good-sized book, for Refrigeration enters practically every operation, from the time crude oil comes from the ground to hundreds of phases in refining, distillation, fractionation, rectifying, deasphalting, dewaxing, and many others.

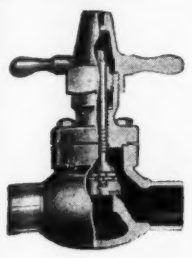
FOLLOWING CLOSELY the improved techniques in Oil and Gasoline Refining, A-P DEPENDABLE Refrigerant Controls find ready service in many phases of the Industry's use of REFRIGERATION. In this Industry, as in many others, research men are making full use of the aid offered by the A-P RESEARCH DIVISION in perfecting new products, new controls for ever greater mechanical efficiency.

AUTOMATIC PRODUCTS COMPANY
2450 N. Thirty-Second St. Milwaukee 10, Wis.

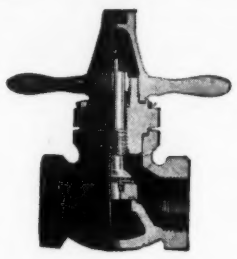
A-P 220K
THERMOSTATIC EXPANSION VALVE

DEPENDABLE
REFRIGERANT VALVES

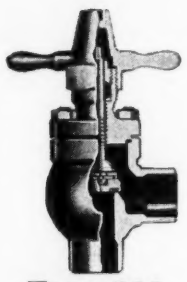
WING CAP VALVES



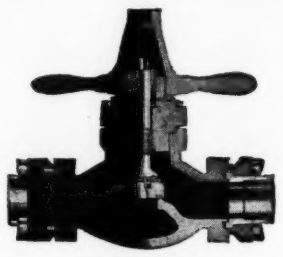
Type 203
Non-Ferrous Alloy Globe Valve
Size Connections: ⅞", 1⅛", 1⅜", 1⅝", 2⅛", 2⅝", 3⅛" and 3⅝" O.D.S.



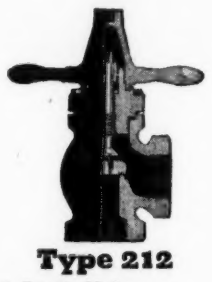
Type 201
Semi-Steel Globe Valve
For use with O.D.S. Adapters
Size Connections: ½", ¾", 1", 1¼", 1½" and 2" F.P.T.



Type 216
Non-Ferrous Angle Valve
Size Connections: ⅞", 1⅛", 1⅜", 1⅝", 2⅛," 2⅝", and 3⅛" O.D.S.



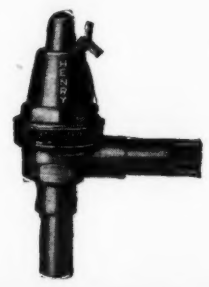
Type 223
Semi-Steel Globe Valve
With Companion Flanges, Sleeves, Bolts and Gaskets
Size Connections: 1⅝", 2⅛", 2⅝", 3⅛", 3⅝" and 4⅛" O.D.S.



Type 212
Semi-Steel Angle Valve
For use with O.D.S. Adapters
Size Connections: ½", ¾", 1", 1¼", 1½" and 2" F.P.T.

AUTOMATIC PRESSURE RELIEF VALVES

Types 526 and 527
Forged Brass Angle Relief Valves, Inlet at Bottom
Size Connections: ⅜" M.P.T. (Bottom) x ⅜" Flare; and ½" M.P.T. (Bottom) x ⅝" Flare



Type 541
Snap Action Diaphragm Relief Valve
Size Connections: ½" F.P.T. x ½" F.P.T.

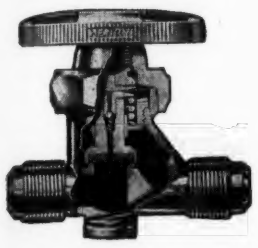
Type 542
Snap Action Diaphragm Relief Valve
Size Connections: ⅝" O.D.S. x ⅝" O.D.S.

Henry Products AVAILABLE FOR THE DURATION

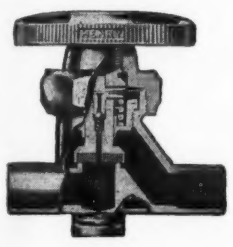
UNDER SCHEDULE IV, LIMITATION ORDER L-126

Retain this advertisement because it contains a complete list of sizes of Henry Products that we are permitted to produce under present limitation orders.

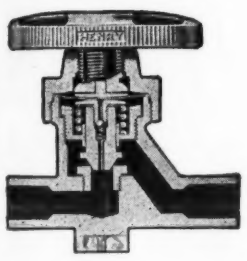
HENRY VALVE CO. TRADE MARK



Type 625
Two-Way Shut-Off Valve
Size Connections: ¼", ⅜", ½" and ⅝" Flare

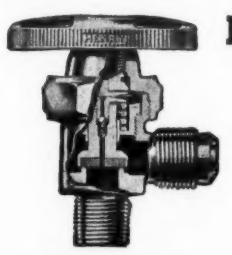


Type 626
Two-Way Shut-Off Valve
Size Connections: ¼", ⅜", ½", ⅝", ¾", ⅞" and 1⅛" O.D.S.

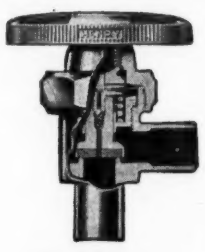


Type 629
Two-Way Expansion Valve
Size Connections: ¼", ⅜", ½", ⅝", ¾", ⅞" and 1⅛" O.D.S.

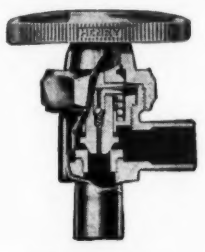
BALANCED ACTION DIAPHRAGM PACKLESS VALVES



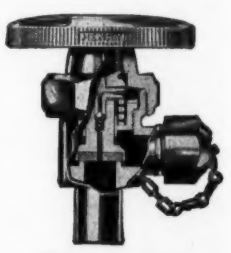
Type 645
Angle Shut-Off Valve
Side Connection: Flare Bottom—Male Pipe Thread
Size Connections: ¼" F. x ¼" M.P.T.; ⅜" F. x ¼" M.P.T.; ¼" F. x ⅜" M.P.T.; ⅜" F. x ⅜" M.P.T.; ½" F. x ⅜" M.P.T.; ⅝" F. x ½" M.P.T.



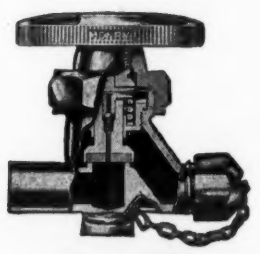
Type 647
Angle Shut-Off Valve
Size Connections Side and Bottom: ¼", ⅜", ½", ⅝" ¾", ⅞", 1⅛", 1⅜" and 1⅝" O.D.S.



Type 649
Angle Expansion Valve
Size Connections Side and Bottom: ¼", ⅜", ½", ⅝", ¾", ⅞" and 1⅛" O.D.S.



Type 643
Angle Charging, Purging or Drain Valve
Size Connections: ⅜" O.D.S. x ⅜" Flare and ½" O.D.S. x ½" Flare



Type 623
Two-Way Charging, Purging or Drain Valve: Has removable seal cap, chained to valve body.
Size Connections: ⅜" O.D.S. x ⅜" Flare and ⅝" O.D.S. x ⅝" Flare

ABSO-DRY PRESSURE SEALED DRYERS

Types 756 and 757 Cartridge Dehydrators

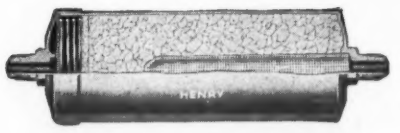
Side outlet type with dispersion tube. Flanged construction permits removal and replacement of cartridge without loosening end connections. Size Connections: ⅜", ½", ⅝", ¾", ⅞" and 1⅛" O.D.S. Dehydrant Capacity: 43, 84 and 130 cu. in.

Type 74 Refill Cartridge with Dispersion Tube

For 756 and 757 Cartridge Dehydrators. Filled with Silica Gel only. Dehydrant Capacity: 43, 84 and 130 cu. in.

Type 743 Dehydrator

A new refillable type dehydrator with removable screen tube assembly soldered to outlet connection. Has liberal opening for removing dehydrant, cleaning filter screen and refilling dehydrant in the field. Dispersion tube at inlet exposes entire volume of dehydrant to penetration by refrigerant.
Size Connections: ¼", ⅜", ½" and ⅝" Flare. Dehydrant capacity: 20, 40 and 60 cu. in.



Type 712 Dehydrator

Single joint, drawn shell with dispersion tube.
Size Connections: ¼" and ⅜" Flare
Dehydrant Capacity: 13 cu. in.

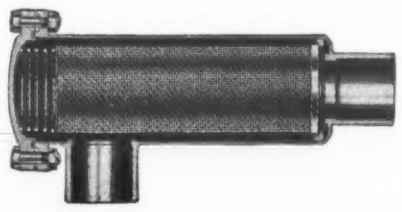
Type 704 Dehydrator

For small refrigeration units. Filled only with Silica Gel.
Size Connection: ¼" Flare
Dehydrant Capacity: 3 cu. in.

Type 706 Dehydrator

Single joint, drawn shell—soldered cap.
Size Connection: ¼" Flare
Dehydrant Capacity: 6.2 cu. in.

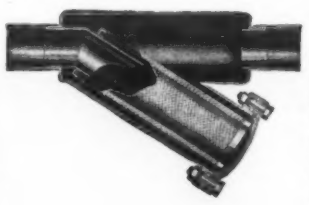
HENRY STRAINERS



Type 866 Angle Strainer

Reinforced welded seam monel screen cartridge can be taken out for cleaning without removing strainer from line. Choice of 100 or 50 mesh screen; area 23 to 85 sq. in.

Size Connections: ⅜", ½", ⅝", ¾", ⅞", 1⅛", 1⅜", 1⅝", 2⅛", and 2⅝" O.D.S.



Type 895 "Y" Strainer

Hot tin dipped welded steel construction with copper and connections (except steel in F.P.T. sizes). Negligible pressure drop. Reinforced removable strainer has large screen area. Baffle prevents heavy particles injuring screen. Choice of 50 or 100 mesh screen; area 23 to 175 sq. in.

Size O.D.S. Connections: ⅝", ¾", ⅞", 1⅛", 1⅜", 1⅝", 2⅛", 2⅝", 3⅛" and 3⅝".

Size F.P.T. Connections: 1", 1¼", 1½", 2", 2½" and 3".

Type 890 Strainer

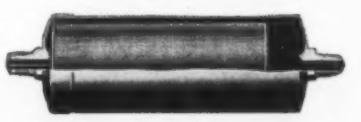
Has 120 mesh brass screen reinforced with No. 10 mesh brass screen.
Screen area, 4 sq. in.
Size Connections: ¼", ⅜" and ½" Flare

Type 891 Strainer

Single solder joint, drawn brass shell with 50 or 100 mesh welded seam, monel screen anchored between end of shell and inlet cap.
Screen area 11.5 sq. in.
Size Connections: ¼", ⅜" and ½" Flare

Type 892 Strainer

Same construction and screen mesh as Type 891 except that screen area is 26 sq. in.
Size Connections: ¼", ⅜", ½" x ⅝" Flare



HENRY VALVE CO.

3260 W. GRAND AVE., CHICAGO 51, ILL. ★ ★

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR CONDITIONING • ALSO AMMONIA VALVES AND FORGED STEEL FITTINGS

★ APPROVED FOR NAVY, MARITIME COMMISSION AND ARMY USE ★

WPB Simplifies General Rules Governing Reproduction of Official Forms

WASHINGTON, D. C.—Simplified general rules governing the reproduction of WPB forms and orders have been established in Priorities Regulation No. 5, as amended Aug. 23, 1943, WPB has announced.

Any person may reproduce any WPB form, order or regulation, but a form must, when reproduced bear on its face the words "specimen copy" or "information copy" in letters not less than one inch high or in 36 point caps; if it falls into either of the following classes:

(1) Forms or orders which are designed to be issued by any government agency and which have not yet been signed by the government agency. For example, Form GA-146 which is used by various Industry Divisions of WPB to authorize purchase or sale of particular goods. The limitation does not apply to forms which are both designed to be filed with the government agency and later to be issued to the applicant by the government agency. For example, the limitation would not apply to such forms as WPB-541 (formerly PD-1A).

(2) Forms bearing a serial number, designed to be filed with a governmental agency and later issued by the agency but which have not yet been signed by the agency. A most common example of this particular class is Form WPB-542 (formerly PD-3A).

Forms may be reproduced by any process—photographic, printing, mimeographing, or otherwise — but the following conditions must be observed:

(1) If the forms are reproduced for filing with a government agency, the copy must be exactly like the officially published form as to paper size, format, and arrangement of paragraphs or tables on each page. The color of the paper must be approximately the same as that of the official copy.

(2) Copies of all orders or forms bearing the signature of any official of the United States Government or any other authorized person must include the signature. This signature must be in type or print preceded by "(Signed)" unless the entire order or certificate is reproduced by photographic process.

Statements contained in orders or forms to the effect that they may not be reproduced may be disregarded if the conditions of this regulation are complied with, unless the order or form states specifically that the regulation does not apply to the form in question.

Nash-Kelvinator Votes Dividend On Stock

DETROIT — Directors of Nash-Kelvinator Corp. at a meeting Aug. 31, voted a dividend of 12½ cents per share on outstanding capital stock, payable Sept. 30, to the stock of record at the close of business Sept. 10.

G-E Sets Up Branch In Albany To Service Air Conditioning

ALBANY, N. Y. — Servicing of General Electric air conditioning and oil heating equipment in this district will be handled by the new Air Conditioning Service Center set up at 25 Western Ave. here by General Electric Co., according to C. M. Wilson, district manager of the G-E Appliance and Merchandise department.

Sales and service of this equipment were formerly under Westover-Wolfe, Inc., 170 Washington Ave. here, which was the first air conditioning and heating equipment dealership appointed by G-E in the entire country. The firm will continue, however, as dealer for these products in metropolitan Albany.

Robert H. Dines, for the past 10 years affiliated with Westover-Wolfe, will manage the new service center. Besides servicing, the new firm will supply parts to 28 air conditioning and heating dealers in upper New York state and western New England.

Harder Refrigeration Corp. Names Advertising Agency

COBLESKILL, N. Y.—Harder Refrigeration Corp. here has appointed Agricultural Advertising & Research, Inc. of Ithaca, N. Y. as its advertising agency, according to Frank H. Ryder, Harder president. Roy H. Park is account executive.

Rough Stuff—

Universal Cooler Designs Truck Cooler For Tough Service on Alaska Highway

When a truck driver starts out on the Alaska Military highway he knows he has a tough job, and that goes for the truck refrigeration unit, too. So Universal Cooler engineers and Army experts got together to design the truck refrigeration unit pictured above, which is built to withstand the great variety of hard knocks usually encountered on the road through the wilderness to our Alaskan outposts.

Frank McNeal (left), president of Universal Cooler, wishes good luck to Jack Baragar of the company's service department as Mr. Baragar leaves to catch the Army bomber that took him from Chicago to Dawson Creek, British Columbia for "on-the-spot" help while these new truck units are installed.

* * *

Soldiers in Alaska Will Eat Better Food, Thanks to New Truck Unit

MARION, Ohio—Designed to withstand the hard knocks and unusual conditions encountered by refrigerated Army supply trucks transporting food to Alaska via the Alaska Military highway, a new truck refrigeration unit is in production at the Universal Cooler Corp. plant here.

Months of cooperative research work by Universal Cooler's expanded research-engineering department and Army experts perfected the design of the new unit to cope with every hardship likely to be met on the 1,671-mile road through the north country.

The refrigerating mechanism and controls are housed in a special cabinet mounted atop the cab of the truck, connected with the refrigerant lines which cool the food compartment in the truck body.

Use of refrigerated trucks should permit a greater variety and amount of food to be sent north to the men stationed at American bases, thus boosting both the health and morale of the soldiers, Universal Cooler officials believe.

Jack Baragar of Universal Cooler's service department will direct "on-the-spot" installation of the new equipment in Canada and Alaska. An Army bomber flew Mr. Baragar from Chicago to Dawson Creek, British Columbia, whence he will go to White Horse and Fairbanks, Alaska.

In addition to this special truck refrigeration unit, Universal Cooler is producing a variety of refrigeration units for all branches of the service, as well as cooling equipment for machine guns, traversing mechanisms for tank gun turrets, and lubricating pumps for superchargers.

Stops the Drops!
ELIMINATORS IN MARLO AIR UNITS "SQUEEZE THE AIR DRY"
SAFETY ZONE
You need not worry about entrained moisture "carryover" with Marlo Air Units. They are equipped with eliminators—"Z" shaped metal sections closely spaced and mounted in a heavy frame with No. 14 gauge endbars. These eliminators function as a built-in safety zone to prevent "carryover".
MARLO
BLOWER TYPE AIR UNITS
Evaporative Condensers and Coolers • Air Conditioning Units
Industrial Coolers
"MARLO MEANS HEAT TRANSFER EQUIPMENT"
PREVENT INFLATION AND BUY A WAR BOND TODAY
MARLO COIL COMPANY
ST. LOUIS, MISSOURI

WATER COOLERS

for

Drinking Water
Film Processing
X-Ray
Bakery Service
Jacket Cooling
Shipboard (*Special Models*)
Scuttle Butt

•

Also Cooling Tanks for Penicillin Solution

•

Forty years of experience in building special cooling equipment. Send us your problems.

Filtrine
MANUFACTURING COMPANY
53 Lexington Ave., Brooklyn, N.Y.

How FRIGIDAIRE'S WARTIME PLAN has helped dealers "keep 'em running"

Back the Attack—with War Bonds

EARLY in 1942, when it became apparent that existing refrigeration equipment could not be replaced, Frigidaire intensified its efforts to help dealers solve the many problems confronting them.

Because this Wartime Conservation program was based on the wide experience of factory specialists, as well as actual experiences in the field, it has been unusually successful. Covering all phases of service activities from factory to user, it has helped Frigidaire dealers perform an outstanding service job during a very critical period.

Moreover, the Wartime Conservation program is not a one-time affair. It is of continuous help, with up-to-the-minute information and suggestions constantly flowing to the field organization as new problems arise. Here are a few of the reasons why Frigidaire dealers are so enthusiastic about this program:

Factory-Conducted Meetings have been held in all parts of the country to acquaint dealer and district personnel with first-hand details of the Conservation program. Factory specialists are also in touch with the field constantly to lend assistance wherever and whenever they can.

District Meetings and other means have been used to show dealers how to set up an inexpensive service shop; how to conserve time and expense by proper diagnosis of service complaints; how to conserve parts by repairing instead of replacing; how to build customer good will; and how to maintain identity as service headquarters.

Field Training Schools conducted by factory and district instructors have been of great assistance. Hundreds of new and experienced servicemen have received fundamental and advanced training in Household Refrigeration, Commercial Refrigeration, and Electric Range work. Night School classes have been very popular.

A Correspondence Course, over a period of 16 weeks, has had an enrollment of more than 5,000 students. This course embraces Household and Commercial subjects, from basic to advanced information. Personal aid and encouragement are given to each student by district service specialists when grading lessons.

Training Films have been made available to help new servicemen and to "refresh" veterans. Films cover such subjects as "Changing Sealed Rotary Units in Various Style Cabinets," "Service Operations on Household Reciprocating Systems," "The Easy Way to Service and Diagnose the Sealed Rotary System," "Service Operations on Ice Cream Cabinets," and "Servicing Wet Storage Beverage Coolers."

Handy Reference Guides help new servicemen and veterans alike. These easy-to-follow pocket size manuals have proved to be invaluable aids to more intelligent and quicker diagnosis.

Factory Bulletins and the dealer newspaper, the BTU News, are issued regularly to keep the service organization abreast of latest service developments. They also publicize the successful experiences of others and tell the "what, why and how."

Adequate Parts for keeping millions of Frigidaires operating are an important factory responsibility. A large Parts manufacturing department produces, repairs and feeds parts to depots strategically located throughout the country. From there they are distributed to servicing dealers.

Conservation of Critical Materials, affecting the manufacture of hundreds of parts items, has been an important means of assuring the parts and assemblies needed by Frigidaire's servicing dealers.

GENERAL MOTORS SYMPHONY OF THE AIR
Every Sunday Afternoon, NBC Network

A continuous major program to help dealers accomplish these 5 important objectives

1. To cooperate with the Government's Food Conservation and Health Protection Program.
2. To help keep the millions of the nation's refrigerators running.
3. To help dealers locate and train necessary service manpower.
4. To help dealers obtain essential service parts.
5. To help dealers build good will and maintain income.

For Excellence ARMY E NAVY in War Production

FRIGIDAIRE Division of GENERAL MOTORS

Peacetime builders of Home Appliances, Commercial Refrigeration, Air Conditioners

Washer Industry Explains Why New Units Are Needed, Opposes 'Victory' Models

(Concluded from Page 1)

of repair parts needed to keep consumers' washing machines in operation are nearing the vanishing point.

The industry advisory committee which WPB appointed to examine a declared emergency in home laundering facilities found only 96 new washers and 2,618 used washers in the hands of 2,890 retailers in its nationwide survey, while since the first of this year these dealers had received 379,689 requests for washing machines from individuals desirous of buying them.

Increasing difficulty in obtaining repairs for washers now in service, virtual inability to buy washers of any kind, greater amounts of soiled clothes, and an all-time peak in the employment of women—a total of 16,700,000 including some six million in war industries—all make for a crisis in cleanliness which will grow steadily worse unless washer production can be resumed to cope with the emergency, the committee said.

Washer production was stopped by government order on May 15, 1942.

"The demand and need for clean clothes and linens for the American home and public is something which has been taken for granted without realizing the depth of their importance and what it would mean to be without them," the committee declared.

"Returning washers to production, in addition to contributing to industrial and domestic morale, would benefit war production workers and housewives alike, would be a direct aid to the farm labor situation and thus contribute to greater food production and would provide a reconversion employment cushion for all employes engaged now in war work in washer factories," contended the committee.

In its plan the committee asked that the WPB give the washer industry six months' advance notice of its intention to allow reconversion to the production of washing machines and ironers, and suggests that production be resumed at the same ratio that it was discontinued.

"At the time production was being curtailed in 1941 and early in 1942, a ratio was established for each company referred to as the 'exit ratio'," the committee explained. "We believe this fair allocation should be made to each company regardless of their present ability to produce or distribute."

The committee also stressed the fact that if WPB does permit the industry to resume production, sufficient raw materials should be made available so that permission would not be merely an empty gesture.

No "Victory models" are contemplated in the recommendations of the committee, which considers them "undesirable, uneconomic, and unjustified."

Victory models, the committee claimed, would involve: "(1) the time required in re-engineering, by someone, to arrive at a model or models which would meet the WPB requirements; (2) each company re-adapting and revising its production facilities to a new model; (3) making tools, dies, jigs, patterns, and fixtures which would consume essential time; and (4) the use of critical materials and duplication of facilities which, for the projected time required, would amount to a serious waste.

"The choice of models to be made should be left to each manufacturer, in accordance with the best facilities he has at his disposal," suggested the committee.

"We are all in accord that at present the most important goal is that of winning the war," the committee stated. "However, we must look ahead. We must anticipate today what our problems and our plans will be tomorrow or next year. Members of our industry cooperated unselfishly and wholeheartedly in the complete conversion from civilian to total war production.

"The industry now proposes to cooperate once again with the War Production Board and its proper branches in evolving a thorough understanding of the problems to be met, and the procedure to be followed in returning its plants to production for civilian needs," concluded the proposal.

FTC Charges 'Unfair Discounts' In Move Against Associated Merchandising Corp.

WASHINGTON, D. C.—Charges that Associated Merchandising Corp. and its 21 member department stores violated the Robinson-Patman Act by "knowingly inducing manufacturers, producers, and suppliers to discriminate in price in their favor by selling them merchandise of like grade and quality at lower prices or higher discounts than those accorded competing stores" were made by the Federal Trade Commission recently.

"In the conduct of the respective businesses, A.M.C. and its members have entered into and are carrying out an agreed and planned course of action to obtain for the members special allowances or discounts on purchases of merchandise for their stores," the FTC alleges.

"Generally, these special allowances or discounts granted by manufacturers or other sources of supply take the form of rebates on the purchases by the members for their respective stores during a specified period, usually a year," the complaint charges. "At the end of the period the sellers pay the rebates to A.M.C., which distributes them to the respective stores according to the amount of merchandise each has purchased from the particular sellers during the period specified.

"Manufacturers and other suppliers of goods who grant the rebates solicited by A.M.C. are approved and classified as 'preferred resources,'" the complaint continues, "and as an inducement for and in consideration of the discrimination in price, A.M.C. continuously endeavors to have its members confine their purchases to such 'preferred resources.'

"As a further inducement for the discrimination in price so granted," FTC charges, "the respondent department stores in selling merchandise give preference to goods purchased from the 'preferred resources' and do not 'push' the resale of comparable merchandise bought from other sources of supply.

"Although competing department stores individually may purchase from a particular 'preferred resource' merchandise in an amount as great as, or in excess of, that purchased by a store of a respondent member of A.M.C., nevertheless they are not granted by the 'preferred resource' any similar price or discount on their purchases," the FTC complains.

Sales volume of approximately $425,000,000 was handled by the participating department stores in 1941, according to the FTC. Member stores are:

Abraham & Straus, Inc., Brooklyn; L. S. Ayers & Co., Indianapolis; Bloomingdale Bros., Inc., New York City; The Herzfeld-Phillipson Co., Milwaukee; Bullock's, Inc., Los Angeles; Burdine's, Inc., Miami, Fla.; The Dayton Co., Minneapolis; The Emporium-Capwell Co., San Francisco and Oakland, Calif.; Wm. Filene's Sons Co., Boston; B. Forman Co., Rochester, N. Y.; Joseph Horne Co., Pittsburgh.

J. L. Hudson Co., Detroit; Hutzler Brothers Co., Baltimore; The F. & R. Lazarus & Co., Columbus, Ohio; The Rike-Kumler Co., Dayton; The John Shillito Co., Cincinnati; Stix, Baer & Fuller Co., St. Louis; Strawbridge & Clothier, Philadelphia; The Wm. Taylor Son & Co., Cleveland; Thalhimer Brothers, Inc., Richmond, Va.; and R. H. White Co., Boston.

The respondents are granted 20 days to answer the complaint.

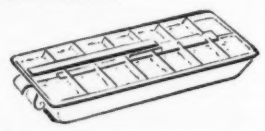
Until the Axis' White Flag Flies—

Nearly 1000 Stars on our Service Flag constantly remind some 6000 Inland men and women that the freedom for which Americans fight and die and work, is far from won.

Therefore, until the enemies of free people fly the white flag of complete and "unconditional surrender," Inland management and workers have one common objective.

This objective is to perfect each day our war-wrested skills and "know-how" and to improve each day our many contributions to products and processes of war production.

Without adding or detracting from our determination to serve better our fighting comrades today, we at the same time are enhancing our ability to serve you better in a peaceful tomorrow.



INLAND MANUFACTURING DIVISION
General Motors Corporation *Dayton, Ohio*

BACK THE ATTACK with WAR BONDS

Illustrated is one of the series of Inland designed posters appearing throughout our plant and the plants of our numerous sub-contractors as part of our war production drive activities, which has helped our employes Beat Their Quotas of production for—

VICTORY WORK BY INLAND

Enlisted for Victory are the following products of Inland's Laboratory Controlled Manufacture: carbines; plastic helmet liners and extinguisher horns; tank tracks, clutches; Army truck clutches, brake linings; gun sights, shoulder rests; Army and Navy aircraft steering wheels; Marine engine motor mounts; parts for airplane motors, torpedo boats, submarine chasers, landing craft and artillery lighters.

INLAND MANUFACTURING
Rubber, Metal, Plastics

Furniture Men Ask OPA To Raise Ceiling

WASHINGTON, D. C.—Pressing for a temporary increase to carry them over a 60-90 day wait pending the outcome of a government questionnaire, furniture manufacturers met with officials of the Office of Price Administration recently with the appeal that reduced volume is rapidly lowering their profits.

OPA is considering an upward adjustment in furniture ceilings, according to the report, but not until a check-up by questionnaires has been made throughout the industry. Manufacturers assert that although material and labor costs have increased sharply since 1941, they have been able to absorb the advances because of a high rate of production but with shipment falling steadily, this will no longer be possible.

While all furniture men agree that higher ceilings are justified, many of them are doubtful that any relief will be given in view of the President's "hold-the-line" order. Others, however, are optimistically marking all orders "subject to prices in effect at the time of shipment."

In their appeal to OPA manufacturers stated that due to a "gentleman's agreement" with OPA in 1941 furniture prices were really frozen as of that time, and not as of March, 1942, like other industries.

Bush Zentz Co. Will Service Frigidaire in Arlington, Va.

ARLINGTON, Va.—The Bush Zentz Refrigeration Co. recently received a franchise to operate as a Frigidaire service agency for the territory covering Arlington and Alexandria, the company announces.

PROPERLY COOLED DRINKING WATER ALWAYS AVAILABLE

EBCO
Electric Water Coolers

"FOUNTAINS of MORALE"

There's nothing better, more healthful, more sensible than cool, fresh *water* for getting rid of "thirst-fatigue." This recognized fact creates active business for you now—supplying Ebco's popular OASIS ELECTRIC WATER COOLERS* to vital war plants. OASIS coolers assure the most enjoyable, invigorating, drinkably-controlled flow of water ever developed—they're "fountains of morale." That's because they're made in one of the most advanced and fully-equipped production-line plants of its kind—and made by people who pioneered in the electric water cooler field. Write for information today!

* The EBCO Electric Water Cooler shown here, built for marine use to rigid Navy and Government specifications, is typical in quality and fine performance of Ebco's OASIS Coolers, designed for industrial and commercial installation.

The EBCO Manufacturing Company
401 W. Town St., Columbus, Ohio

ANOTHER EXAMPLE OF KELVINATOR'S RETAIL-MINDED ACTION IN WARTIME.

SCRAP IS POWER

Cooperate With Your Industry! Salvage All Inoperative Parts Containing Critical Materials . . . Put Vitally-Needed Scrap Back Into The Scrap TODAY!

New "Wartime Idea Exchange" Program Provides Monthly Consumer Contact for Kelvinator Retailers

"Helps for Homemakers," Kelvinator's attractive new booklet, is 5½" x 8" in size, suitable for over-counter distribution or, when folded, for mailing.

WINNERS IN KELVINATOR'S FIRST "WARTIME IDEA EXCHANGE" PROJECT

$1,000 in War Savings Bonds to These Top Names in Home Economics

SYBIL D. BATES—*Asst. State Supervisor* Emergency Farm Labor, 524 Post Office Bldg., Little Rock, Ark.

ELIZABETH D. BAYKIN—*Home Demonstration Agent*, Moncks Corner, S. C.

PHILOMENE BEGNAUD—*Home Demonstration Agent*, St. John Parish, Edgard, La.

GERTRUDE BERG—*Asst. Home Service Director*, Milwaukee Gas & Light Co. 826 N. Cass, Milwaukee, Wisc.

CHRISTINE M. BERGIN—*Home Service Demonstrator*, Plymouth Electric & Water Utilities, Plymouth, Wisc.

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Copies of the September issue of "Helps for Homemakers," with this month's 40 prize-winning ideas, are now available to all Kelvinator appliance retailers at nominal cost. We suggest that you contact your Kelvinator Distributor or Zone as soon as possible to obtain the quantity you will require.

(Availability of "Helps for Homemakers" booklets for consumer distribution is subject to any future Government paper conservation orders.)

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Methyl Chloride Limitations

Dr. Walker Discusses Hazards, Tells How To Avoid Them

By Dr. Walter O. Walker, Research Director, Ansul Chemical Co.

When intelligently used, there is no better refrigerant than methyl chloride. When misused, trouble may result. This refrigerant when mixed with air in well-known and specific mixtures is explosive; when breathed in certain concentrations and periods of time, it is toxic.

The demand for "Freon-12" for uses other than refrigeration and air conditioning has resulted in an acute shortage and an almost "free-for-all" replacement of "Freon-12" with methyl chloride. The resulting indiscriminate use of methyl chloride in air conditioning and certain other installations may lead to hazards due to toxicity and resulting from explosions.

The purpose of this article is to discuss these limitations factually for the benefit of those who are tempted, due to present conditions, to make ill-advised use of methyl chloride.

Properties of Methyl Chloride

The properties of methyl chloride approach those of the ideal refrigerant as closely as any other employed at the present time. Methyl chloride is particularly suited to use in "commercial" compressors and has a long term of acceptable service in thousands of machines.

It is considered to be more than satisfactory for small systems up to at least 10 tons capacity. A detailed discussion of the properties of methyl chloride, which so suit it to these particular applications, is beyond the scope of this article since it is more important to talk about the precautions which must be observed in order to avoid possible hazards arising from toxicity and explosions.

Explosion and Flammability Hazard

The Underwriters' Laboratories Report classes methyl chloride as having moderate flammability and a moderate explosion hazard. "Methyl chloride is moderately flammable, being much less hazardous than gasoline and more hazardous than ammonia." The limits of flammability or explosion range given are 8.1 to 17.2% by volume (10.7 to 22.7 lbs. per 1,000 cu. ft.).

This means that a concentration equivalent to 10.7 lbs. of methyl chloride per 1,000 cu. ft. must be present in air before the mixture can be exploded. Mixtures in air containing larger amounts of methyl chloride, up to the equivalent of 22.7 lbs. per 1,000 cu. ft., will explode with varying degrees of violence. The maximum pressure developed by methyl chloride is 69 lbs. per square inch (gage pressure) at 11.5% by volume in air. Gasoline has a maximum pressure of 100 lbs. per sq. in.

The comparatively large weight of methyl chloride required to produce an explosive mixture in air reduces the probability of occurrence of such explosions. Examination of available records over a number of years shows that explosions of methyl chloride are rare.

However, this record is based quite largely upon the use of methyl chloride in "commercial" units and the employment of large amounts of methyl chloride as in air conditioning systems (other than small unit coolers), would appear to increase the probability of explosions.

Adequate ventilation is the answer. Ventilation by means of windows or doors (unless they are secured so as to remain permanently open) is not at all satisfactory. A basement or other closed area should be equipped with an exhaust fan and an outlet for fresh air, so located as to create strong cross ventilation. Consult the A S A Code Section at the end of this article.

Health Hazard

Methyl chloride is toxic provided exposure is made to certain specific amounts for correspondingly definite periods of time. The following table is from U. S. Public Health Bulletin No. 185, March, 1929.

Table 1—Effect of Various Concentrations of Methyl Chloride

	% by volume in air	Lbs. per 1000 cu. ft. at 27.1° C (70° F)
Dangerous 30-60 minutes	2–4	2.6 –5.2
Maximum amount for 60 minutes without serious disturbances	0.7	0.92
Slight symptoms after several hours or maximum amount for prolonged exposure	0.05–0.10	0.066–0.132

The Underwriters' Laboratories report (The Comparative Life, Fire, and Explosion Hazards of Common Refrigerants, Nov. 13, 1933) "Methyl Chloride is an Anesthetic." "It will be noted that there is a definitely delayed toxic action in the case of methyl chloride."

It is obvious that a relation exists between the possible hazard arising from toxicity and the amount of methyl chloride escaping, the area into which it escapes, the amount removed by ventilation, and the time of exposure of the individual.

Thus exposure for a longer time to a small number of pounds of methyl chloride might be hazardous in a small poorly ventilated area, while harmless in larger ones. On the other hand large amounts of methyl chloride may produce a hazardous condition in large areas.

The lack of definite warning power of sufficient intensity in concentrations dangerous to life has led many persons, working with methyl chloride, to stay in a toxic concentration longer than desirable. Carelessness of this type can lead to tragedy or near tragedy since the after effects are much worse than the first effects.

Where a toxic concentration is suspected, adequate (See Sections in A S A Code) ventilation should be provided before entering the area involved or a gas mask should be worn. In the latter case it should be noted that cannister-type gas masks are unsafe for larger concentrations. Self-contained oxygen breathing apparatus or a mask with a long air hose and outside source of air may be required under extreme conditions. Since it is unlikely that all service engineers will be provided with proper masks, good ventilation must be maintained and is a prime requisite.

Exposure to excessive concentrations of methyl chloride above the minimum time results in an attack similar to alcohol intoxication with the characteristic symptoms of drowsiness (anesthetic effect), mental confusion, nausea, and possible vomiting.

At the first sign of drowsiness or any of these symptoms **GET OUT.** In case of excessive exposure to methyl chloride, the patient should be immediately removed to fresh air and a doctor called. In general, the anesthetic effect of methyl chloride is much less pronounced than its after effects. The latter are due to a breakdown of methyl chloride in the body. After effects are similar to those of methyl (wood) alcohol poisoning.

Adequate ventilation (see A S A Code Section) is a prime requisite and will eliminate hazards due to toxicity.

Aluminum and Methyl Chloride

Methyl chloride, unlike "Freon-12," attacks aluminum. For this reason, aluminum must be excluded or removed from all machines containing methyl chloride.

The action of methyl chloride on aluminum results in the formation of two chemical compounds (dimethyl aluminum chloride [$(CH_3)_2$ AlCl] and methyl aluminum dichloride (CH_3AlCl_2)), both of which ignite spontaneously when exposed to air or oxygen. Moisture, if present in sufficient amounts, decomposes them.

The chemical action, which results in the formation of these compounds, may be quite a violent one. These aluminum methyl compounds, which dissolve readily in methyl chloride, may produce ignition of the mixture or decomposition may result in the formation of considerable "smoke" without a flame or exposure to air. These actions are adequate warning to the presence of the compounds.

Another very serious result of the action of methyl chloride on aluminum arises from possible destruction of gaskets made of aluminum. This may result in a leak of considerable size so that the refrigerant is rapidly lost setting up a hazard due to toxic effects and possible danger of explosion or ignition of methyl chloride.

In a recent accident which resulted in the death of one man, a leak was produced by the action of methyl chloride on an aluminum gasket. The methyl chloride charge escaped rapidly (and probably along with it considerable oil in spray form) and since adequate ventilation had not been provided, the explosive mixture became ignited at the time the deceased entered the basement room containing the compressors. Elimination of the aluminum gaskets would have prevented the leak and adequate ventilation would have removed the possibility of an explosion. This was obviously a case of poor service engineering.

No other metal in general use in refrigerating machines reacts with methyl chloride. Magnesium reacts and there is a possible chance that zinc might.

Leak Detection

While manufacturers of Halide torches or lamps and producers of refrigerants warn against the use of this device to detect leaks of methyl chloride, it nevertheless is a fact that practically all service engineers do use it and have for years.

Explosions due to ignition of methyl chloride by a Halide torch have not, to the knowledge of the writer, occurred. Adequate ventilation must be present before tests are made with a Halide torch, both to eliminate danger of an explosion and to prevent possible harmful effects of products formed when methyl chloride passes through the flame of the Halide torch.

The Halide lamp uses alcohol or acetylene as fuel, normally producing a colorless flame which turns to green when the lamp picks up very minute concentrations of methyl chloride and to a brilliant blue with larger concentrations.

A soap solution, applied to the suspected point, indicates the leak in many instances by the formation of bubbles.

Changing 'Commercial' Units From 'Freon-12' to Methyl Chloride

It is beyond the scope of this article to suggest the service engineering required to change "commercial" size installations from "Freon-12" to methyl chloride.

In making a change-over from "Freon-12" to methyl chloride or installing methyl chloride machines, it is advisable to follow the recommendations of the Safety Code of Mechanical Refrigeration as sponsored by the American Society of Refrigerating Engineers under the rules and regulations of the American Standards Association as Project B9.

The excerpts given below applying to methyl chloride are quoted from the first revision as published in Air Conditioning and Engineering News, Vol. 27, No. 8, June 21, 1939.

SECTION 3. BUILDING OCCUPANCY CLASSIFICATION

3.10 Locations in which Refrigerating Systems may be placed are grouped by occupancy as follows:

3.20 Institutional occupancy shall apply to that portion of a building in which persons are harbored to receive medical, charitable, educational, or other care or treatment, or in which persons are held or detained by reason of public or civic duty, including among others, hospitals, asylums, sanitariums, police stations, jails, court houses with cells, and similar occupancies.

3.30 Public Assembly occupancy shall apply to that portion of the premises in which persons congregate for civic, political, educational, religious, social, or recreational purposes; including among others, auditoriums, assembly rooms, armories, ball rooms, bath houses, broadcasting studios, colleges, court houses without cells, churches, dance halls, department stores, exhibition halls, fraternity halls, lodgerooms, mortuary chapels, museums, schools, libraries, passenger depots, subway stations, bus terminals, theaters, skating rinks, and similar occupancies.

3.40 Residential occupancy shall apply to that portion of a building in which sleeping accommodations are provided for more than two families, including among others, multiple story apartments, tenements, hotels, lodging houses, dormitories, convents, studios, club houses, and similar occupancies.

3.50 Commercial occupancy shall apply to that portion of a building used for the transaction of business; for the rendering of professional services, for the supplying of food, drink, or other bodily needs and comforts; for manufacturing purposes or for the performance of work or labor except as included under "Industrial" occupancies, including among others, office buildings, professional buildings, markets, restaurants, laboratories, bake shops, fur storage, loft buildings, stores

(Concluded on Page 9, Column 1)

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What the American Standards Association Safety Code on Refrigerants Specifies

(Concluded from Page 8, Column 5)

other than department stores, and similar occupancies.

3.60 Industrial occupancy shall apply to an entire building when used by a single tenant for manufacturing, processing, or storage of materials or products, including among others, chemical, food, candy and ice cream factories, ice making plants, meat packing plants, refineries, perishable food warehouses, and similar occupancies, where a single tenant is defined as a single authority which operates and maintains the entire building and the Refrigerating System.

3.70 Mixed occupancy shall apply to a building occupied or used for different purposes in different parts. When the occupancies are cut off from the rest of the building by tight partitions, floors and ceilings and protected by self-closing doors, the requirements for each type of occupancy shall apply for its portion of the building. When the occupancies are not so separated, the occupancy carrying the more stringent requirements shall govern.

SECTION 4, REFRIGERATING SYSTEM CLASSIFICATION BY TYPE

4.10 Refrigerating Systems shall be divided into classes, descriptive of the method employed for extracting heat as follows:

4.20 Direct System is one in which the evaporator is in direct contact with the material or space refrigerated or is located in air circulating passages communicating with such spaces.

4.30 Unit System is one which has been assembled and tested prior to its installation and which is installed without connecting any refrigerant containing parts.

4.40 Indirect System is one in which a liquid, such as brine or water, cooled by the refrigerant, is circulated to the material or space refrigertaed or is used to cool air so circulated. Indirect Systems which are distinguished by the type or method of application are as follows:

4.41 Indirect Open Spray System is one in which a liquid, such as brine or water, cooled by an evaporator located in an enclosure external to a cooling chamber, is circulated to such cooling chamber and is sprayed therein.

4.42 Indirect Closed Surface System is one in which a liquid, such as brine or water, cooled by an evaporator located in an enclosure external to a cooling chamber, is circulated to and through such a cooling chamber in pipes or other closed circuits.

4.43 Indirect Vented Closed Surface System is one in which a liquid, such as brine or water, cooled by an evaporator located in a vented enclosure external to a cooling chamber, is circulated to and through such cooling chamber in pipes or other closed circuits.

4.44 Double Indirect Vented Open Spray System is one in which a liquid, such as brine or water, cooled by an evaporator located in a vented enclosure, is circulated through a closed circuit to a second enclosure where it cools another supply of a liquid, such as brine or water, and this liquid in turn is circulated to a cooling chamber and is sprayed therein.

4.45 Indirect Absorptive Brine System is an Indirect Vented Open Spray System in which the brine will chemically absorb the refrigerant in the system, and the chemical compound so formed in the solution will be stable at temperatures up to 100° F. The brine shall be of such quantity and concentration that it will absorb twice the total quantity of refrigerant in the system. An approved automatic device shall be provided for shutting down the system when the brine concentration becomes such that the brine will absorb only one and one-half times the total quantity of refrigerant in the system.

4.46 Double Refrigerant System is one in which a refrigerant is used in the secondary circuit instead of brine or water. For the purpose of this Code, each circuit shall be considered as a separate Direct Refrigerating System.

4.50 The Direct and various Indirect Systems referred to above are illustrated in Fig. 1.

SECTION 5, REFRIGERANT CLASSIFICATION

5.10 Refrigerants shall, for Safety Code purposes, be divided into groups as follows:

	Chemical Formula
5.11 Group 1	
Carbon dioxide	CO_2
Dichlorodifluoromethane (Freon 12)	CCl_2F_2
Dichloromonofluoromethane (Freon 21)	$CHCl_2F$
Dichlorotetrafluoromethane (Freon 114)	$C_2Cl_2F_4$
Dichloromethane (Carrene No. 1) (Methylene chloride)	CH_2Cl_2
Trichloromonofluoromethane (Freon 11) (Carrene No. 2)	CCl_3F
5.12 Group 2	
Ammonia	NH_3
Dichloroethylene	$C_2H_2Cl_2$
Methyl chloride	CH_3Cl
Ethyl chloride	C_2H_5Cl
Methyl formate	$HCOOCH_3$
Sulphur dioxide	SO_2
5.13 Group 3	
Butane	C_4H_{10}
Ethane	C_2H_6
Isobutane	$(CH_3)_3CH$
Propane	C_3H_8

SECTION 6, INSTITUTIONAL OCCUPANCIES

General

6.10 No Refrigerating System shall be installed in or on public stairways, hallways, lobbies, entrances or exits.

6.11 Refrigerant piping or tubing shall not be carried through floors except that for the purpose of connecting to a condenser on the roof, it may be carried through a continuous, rigid and tight fire-resisting (four (4) hour rating) flue or shaft having no openings on intermediate floors, or it may be carried on the outer wall of the building provided it is not located in an air shaft, closed court or other similar open spaces enclosed within the outer walls of the building.

Group 2 Refrigerants

6.30 Group 2 refrigerants shall not be used except in Unit Systems containing not more than six (6) pounds of refrigerant when installed in kitchens, laboratories or mortuaries, or except in systems containing not more than five hundred (500) pounds of refrigerant and having all refrigerant containing parts installed in a Class T machinery room.

6.31 Group 2 refrigerants shall not be used in a system for air conditioning for human comfort, except in an Indirect Vented Closed Surface System, or in a Double Indirect Vented Open Spray System, or in an Indirect Absorptive Brine System.

SECTION 7, PUBLIC ASSEMBLY OCCUPANCIES

Group 2 Refrigerants

7.30 Group 2 refrigerants shall not be used except in Unit Systems containing not more than twelve (12) pounds of refrigerant, or except in systems containing not more than one thousand (1,000) pounds of refrigerant and having all refrigerant containing parts installed in a Class T machinery room.

7.31 Group 2 refrigerants shall not be used in a system for air conditioning for human comfort, except in an Indirect Vented Closed Surface System, or in a Double Indirect Vented Open Spray System, or in an Indirect Absorptive Brine System.

SECTION 8, RESIDENTIAL OCCUPANCIES

General

8.10 No Refrigerating System shall be installed in or on public stairways.

8.11 No Refrigerating System shall be installed in public hallways, lobbies, entrances, or exits, except Unit Systems containing not more than four (4) pounds of refrigerant, provided free passage is not obstructed.

8.12 Refrigerant piping shall not be carried through floors except as follows:

a. It may be carried from basements to the first floor or from the top floor to a penthouses or the roof.

b. For the purpose of connecting to a condenser on the roof it may be carried through an approved, rigid and tight continuous fire-resisting flue or shaft having no openings on intermediate floors, or it may be carried on the outer wall of the building provided it is not located in an air shaft, closed court, or in other similar open spaces enclosed within the outer walls of the building.

c. In systems containing Group 1 refrigerants and used for air conditioning for human comfort, the refrigerant piping may be carried through floors provided it is enclosed in an approved, rigid, and tight continuous fire-resisting flue or shaft where it passes through any intermediate space not served by the air conditioning system. The flue shall be vented to the outside or to a space served by the air conditioning system. Such systems shall conform to the requirements of paragraph 8.20.

Group 2 Refrigerants

8.30 No system containing more than six (6) pounds of a Group 2 refrigerant shall be located in sleeping rooms, or spaces directly connected to sleeping rooms.

8.31 No system containing a Group 2 refrigerant shall be used for air conditioning for human comfort unless it is of the Indirect Vented Closed Surface, Double Indirect Vented Open Spray, Indirect Absorptive Brine, or primary circuit of a Double Refrigerant type with all the refrigerant containing parts, excepting parts mounted outside the building, installed in a machinery room used for no other purpose.

8.32 Any system containing more than three hundred (300) pounds of a Group 2 refrigerant shall have all refrigerant containing parts installed in a Class T machinery room.

SECTION 9, COMMERCIAL OCCUPANCIES

Group 2 Refrigerants

9.30 A system containing more than twenty (20) pounds of a Group 2 refrigerant shall not be used for air conditioning for human comfort unless it is of the Indirect Vented Closed Surface, Double Indirect Vented Open Spray, Indirect Absorptive Brine, or primary circuit of a Double Refrigerant type with all the refrigerant containing parts, excepting parts mounted outside the building, installed in a machinery room used for no other purpose.

9.31 Any system containing more than six hundred (600) pounds of a Group 2 refrigerant shall have all refrigerant containing parts installed in a Class T machinery room.

SECTION 11, INSTALLATION REQUIREMENTS

Open Flames

11.50 When the quantity of refrigerant in any one Refrigerating System exceeds the amount given in the following table for each one thousand (1,000) cubic feet of room volume in which the system or any part thereof is installed, then no flame producing device or hot surfaces above 800° F. shall be permitted in such room and all electrical equipment in the room shall conform to the requirements of Article 500—Hazardous Locations Class I of the latest edition of the National Electrical Code as approved by American Standards Association.

Refrigerant	Chemical Formula	Max. Quantity In Lbs. per 1,000 cu. ft. of Room Vol.
Butane	C_4H_{10}	3
Ethane	C_2H_6	3
Ethyl chloride	C_2H_5Cl	6
Isobutane	$(CH_3)_3CH$	3
Methyl chloride	CH_3Cl	10
Methyl formate	$HCOOCH_3$	7
Propane	C_3H_8	3

Machinery Room

11.60 Each refrigerating machinery room shall be provided with tight-fitting door or doors and have no partitions or openings that will permit the passage of the refrigerant to other parts of the building.

11.61 Each refrigerating machinery room shall be provided with means for ventilation to the outer air. The ventilation shall consist of windows or doors opening to the outer air, of the size shown in Table I, or of mechanical means capable of removing the air from the room in accordance with Table I. The amount of ventilation for refrigerant removal purposes shall be determined by the refrigerant content of the largest system in the machinery room.

11.62 When mechanical means are used, they shall consist of a power-driven exhaust fan, which shall be capable of removing from the refrigerating machinery room the amount of air specified in Table 1. The inlet of the fan shall be located near the refrigerating equipment. The outlet from the fan shall terminate outside of the building. When air ducts are used on either the inlet or discharge side of the fan, they shall each have an area not less than specified in Table 1.

11.63 Class T machinery rooms in basements or sub-basements shall have adequate mechanical ventilation operating continuously, which may be considered as a part of the emergency ventilation required in Paragraph 11.61.

TABLE 1. DUCT AREAS AND OPENINGS

Weight of Refrigerant In System, Lbs.	Mechanical Cu. Ft. per Minute Discharge	Duct Area, Sq. Ft.	Open Window or Door Area, Sq. Ft.
Up to 20	150	¼	4
50	250	⅓	6
100	400	½	10
150	550	⅔	12½
200	680	⅔	14
250	800	1	15

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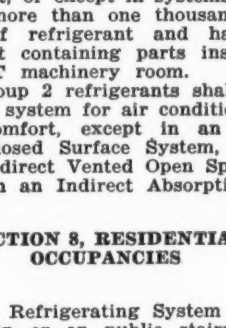

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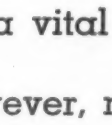
Originators of Instantaneous  *Liquid Cooling Devices*

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Army Refrigeration Problems

By P. B. Reed

Electric Refrigeration and Air Conditioning Division, Servel, Inc.

Changing From 'Freon-12' To Methyl Chloride

The "Freon" shortage seems to be getting no better fast. The Army's need for "Freon-12" for non-refrigeration purposes is so imperative that requirement for refrigeration purposes, either civilian or military, is minor in comparison. One of the greatest services that the refrigeration industry can render the war effort directly in saving the lives of American boys is to turn over to the Army and Navy every pound of "Freon-12" that can possibly be spared.

This shortage of "Freon-12" will mean that many installations will be out of service for lack of refrigerant, unless an acceptable substitute refrigerant can be used in those installations. Methyl chloride is a refrigerant presently available in large quantities, which is suitable to use in place of "Freon-12" in many of these installations. Insofar as efficiency, capacity, thermodynamic properties, and chemical reaction to materials (except one) used in the system are concerned, methyl chloride is very similar to "Freon-12." But methyl chloride is, under certain conditions, flammable and even explosive and in heavy concentration in air it is quite toxic. Moreover, methyl chloride attacks aluminum or aluminum alloys and must not be used in systems containing aluminum.

Nevertheless there are several points that must be considered when changing a system designed for "Freon-12" over to methyl chloride.

1. There is a difference in capacity (B.t.u. per hour) if the displacement remains the same. Theoretically, there is a reduction of about 5% with the system operating at 40° F. evaporator, approximately 10% at 0° F. evaporator, and as much as 30% at sub-zero temperatures—around —50° F., when changing from "Freon-12" to methyl chloride. Actually, the differences are much less due to less pressure drop and better thermal conductivities with methyl chloride than with "Freon-12."

On direct-connected or sealed units the displacement cannot be readily changed to offset the reduction in capacity, but the displacement of belt-driven units may be increased 5%, 10%, or even 30% by increasing the compressor speed and this can be accomplished by changing to a motor pulley with a 5%, 10%, or 30% larger diameter. Ordinarily this will not affect the loading of the motors to any appreciable extent but the manufacturer of the unit should be consulted as to whether or not the compressor can safely be operated at the increased speed.

2. Methyl chloride must not be charged into a system, any part of which, exposed to the methyl chloride, is made of aluminum or aluminum alloy, such as the die-cast rotors in hermetically sealed units. The reaction between methyl chloride and aluminum produces a black precipitate that "gums up" the system and a gas that is flammable and may, in fact, self-ignite on exposure to the atmosphere.

The manufacturer of the condensing unit should be consulted as to whether methyl chloride may be used in his unit. The evaporator coil should be inspected; some coils on "Freon-12" systems are made of aluminum tubing. Some control accessories, such as pressure-reducing valves or expansion valves, have the body, a sleeve, or a piston made of aluminum or aluminum alloy. Even a very small amount of aluminum is enough to cause trouble.

3. Many service engineers have handled methyl chloride since its use became common over twenty years ago, without an accident. Its use involves very little hazard if it is handled with reasonable care. However, many service engineers have had little or no experience with methyl chloride and they must realize that it does require some care in handling to prevent accidents. Fires and even explosions are not only possible but have been known to occur, although rarely.

Methyl chloride is classed by the Underwriters as moderately flammable and explosive in mixtures of 8.1% to 17.2% methyl chloride in air. This means that if the mixture of methyl chloride and air contains as much as 8.1% but not more than 17.2% methyl chloride it can be ignited by an open flame and will burn or explode. Methyl chloride has a perceptible odor, a rather sweet ethereal smell that will indicate its presence in heavy concentrations and if methyl chloride is known or suspected, do not light matches or introduce any open flame such as a Halide torch into such an atmosphere.

USE OF HALIDE TORCH

A Halide torch may be used to locate small leaks of methyl chloride into ventilated spaces, or where the space is large compared to the amount of methyl chloride in the system. For example, there would ordinarily be little, if any, hazard using a Halide torch in testing household refrigerators for methyl chloride leaks, although there could be some hazard in using a Halide torch in testing for leaks a large system having more than 10 or 15 pounds of methyl chloride, especially if there is any possibility of the charge having leaked into a small, unventilated space.

4. Methyl chloride is classed as mildly "toxic," that is, if it is breathed in large quantities it makes people sick and if breathed in very large quantities for an extended period of time it may cause death, very much in the same manner as cooking and illuminating gas. The danger is small in breathing small quantities such as are contained in household refrigerators or even small commercial systems, if these quantities escape into normal living or business quarters with normal ventilation.

AVOID LARGE QUANTITIES

Nevertheless there would be a very real danger to occupants, especially sleeping, invalid or confined occupants, if large quantities of methyl chloride were to escape into small, poorly ventilated spaces, such as bedrooms, small apartments, cellars, basements, or machinery rooms. Methyl chloride should not be used in large quantities in large systems or multiple installations in homes, apartments, hospitals, asylums, or other buildings in which people are sleeping, are helpless or from which they are restrained from escaping.

Persons such as service men or factory workmen, who may be exposed to substantial concentrations of methyl chloride, continuously or for extended periods, may develop a nausea, drowsiness, vomiting, and double vision similar to (and in fact closely akin to) ordinary drunkenness due to over indulgence in alcoholic beverages, but these effects rapidly pass off (in a day or so) if they are relieved from exposure to the methyl chloride-air atmosphere, and there are no observable after effects.

CHECK CITY CODES

Some cities have local codes that entirely prohibit the use of methyl chloride except with an odorant (acrolein) or restrict its use to small installations. Before changing any system from "Freon-12" to methyl chloride the local code authority should be consulted.

5. Compressor oil used with "Freon-12" is, generally speaking, suitable for use with methyl chloride although it is advisable to use a more highly refined oil (even a water-white oil) with methyl chloride than with "Freon-12." The manufacturer of the condensing unit should be consulted on this point.

6. It is not advisable to add methyl chloride to a system partially charged with "Freon-12." There are no serious chemical reactions but the condensing pressure will tend to correspond to "Freon-12" and the evaporator pressure more nearly to that of methyl chloride; so that the efficiency of the mixture will be lower than if either refrigerant were used alone. If an installation charged with "Freon-12" needs additional refrigerant, the "Freon-12" should be withdrawn and the system recharged with methyl chloride.

The "Freon-12" withdrawn contains oil and the new methyl chloride will be free of oil and will, therefore, absorb some oil from the compressor. In such cases add oil to the compressor for a day or two as may be indicated by the oil level of the compressor.

CHANGING OF CONTROLS

7. Liquid Control Devices: If an automatic expansion valve is used it can be reset to the lower pressure corresponding to the required evaporator temperature. If a thermostatic expansion valve of an adjustable type is used it can be readjusted to methyl chloride pressures, especially on an application in which the suction pressure remains fairly constant, such as an air conditioning system.

If the thermostatic expansion valve is the non-adjustable type or if there is a wide range of operating suction temperature and pressure, it may be necessary to remove the "Freon-12" valve and replace it with one built for use with methyl chloride, and this valve will probably have to be adjusted somewhat for that particular installation.

For the same amount of refrigeration much less methyl chloride than "Freon-12," both by weight and by volume, need be circulated. Therefore, capillary tubes should have more restrictive effect. Using the same diameter tubing, the capillary should be about twice as long for methyl chlorides as for "Freon-12."

ADJUSTING CAPILLARY TUBES

This figure is only approximate as conditions on the job will require some "cutting and trying" to get the length giving the exact restrictive effect. Liquid "Freon-12" is heavier than methyl chloride; therefore, the float balls in methyl chloride high-side or low-side floats must be larger to give sufficient lifting and closing power.

8. Pressure Controls and Thermostats: The settings of low-pressure controls must be changed to cut-off and cut-on pressures corresponding to the desired temperatures as indicated by the previous "Freon-12" settings. Thermostat settings do not have to be changed as they operate directly from temperature changes, instead of from pressure changes. High pressure cut-outs should be reset to open at about 175 lbs./sq. in. and close at about 140 lbs./sq. in.

9. The water valve on water-cooled condensing units should be readjusted to a lower pressure corresponding to the pressure-temperature table for methyl chloride; usually about 15 lbs./sq. in. lower. This must be done or the unit will operate at a discharge pressure that is excessive for methyl chloride and this will result in reduced capacity and efficiency of the condensing unit. A good rule to follow is to set the water valve to whatever

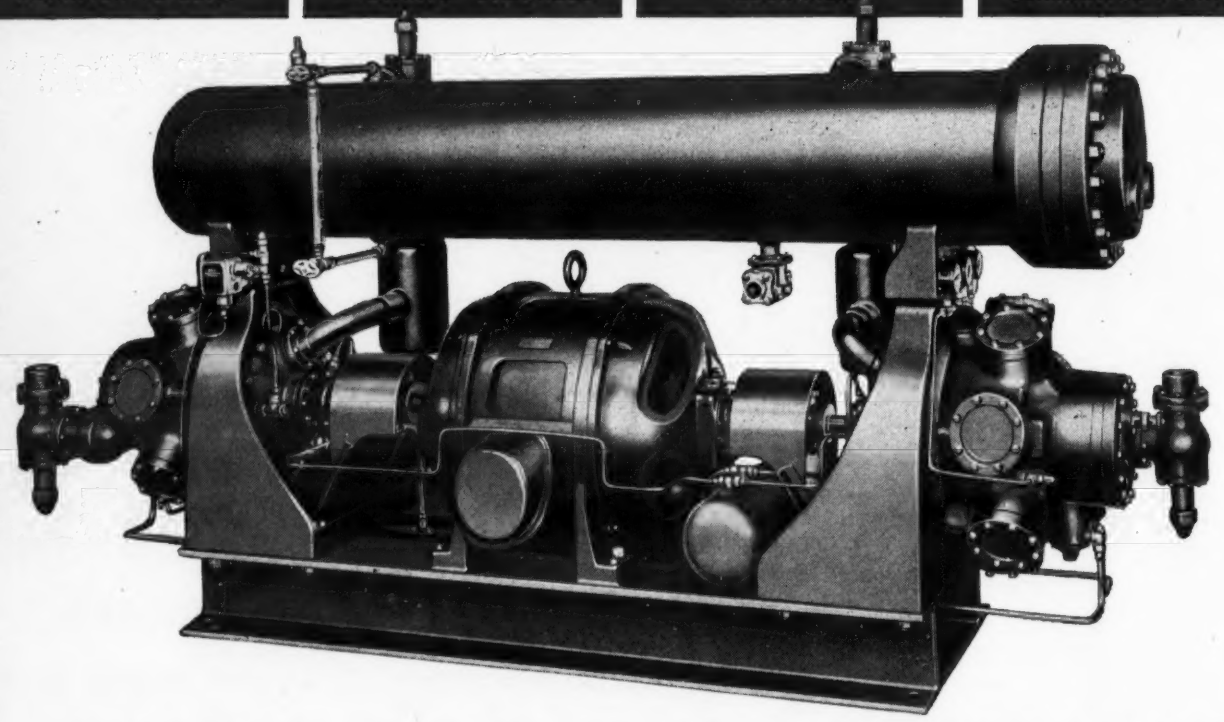
(Concluded on Page 11, Column 1)

AUTOMATIC UNLOADER KEEPS COMPRESSOR ADJUSTED TO LOAD

NORMAL TORQUE MOTOR —STARTS UNLOADED

OIL SEPARATOR FURNISHED AS STANDARD EQUIPMENT

SHORT BALANCED CRANKSHAFT ELIMINATES VIBRATION



HOLDING HUMIDITY AND TEMPERATURE

"ON THE BEAM!"

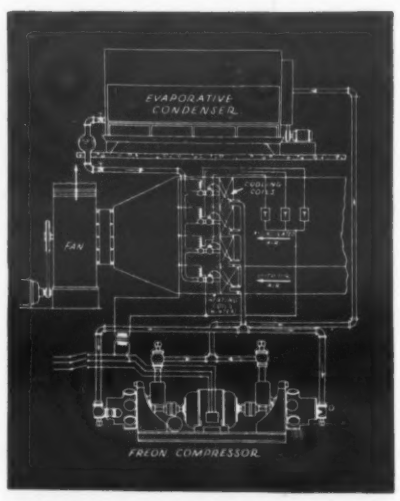
VARIABLE CAPACITY RADIAL COMPRESSOR

Just as Chrysler Airtemp pioneered the "Packaged" 3 H.P. and 5 H.P. air-conditioning units—so has Chrysler Airtemp developed heavy duty central systems for humidity and temperature control that are setting new, high standards of operating efficiency.

Giant war plants, huge government office buildings, precision gauge and machining rooms — often occupying acres of space—are holding humidity and temperature right "on the beam" with Chrysler Airtemp heavy duty units.

The secret of Airtemp's scientific control of indoor atmospheric conditions is found in the combination of the famous Airtemp variable capacity radial compressor with its automatic unloading device, and the patented Airtemp Auto-Balance System for regulating humidity.

Put your humidity and temperature control problems up to Airtemp.



THE CHRYSLER AIRTEMP AUTO-BALANCE SYSTEM

FEATURES: *Automatic Variable Capacity Control, Unloaded Starting, Direct Connected, Simplified Installation, Non-Flexing Valves, Practically No Vibration, No Special Foundations Needed, Interchangeable Parts, Light in Weight.*

BUY WAR BONDS

CHRYSLER AIRTEMP

AIRTEMP DIVISION OF CHRYSLER CORPORATION • DAYTON, OHIO

"Packaged" Units 3 & 5 H. P.— Direct Expansion and Water Cooling Systems — Commercial Refrigeration

● Idle and surplus inventories of refrigeration parts can now be put to essential use in helping to maintain the nation's huge investment in refrigeration.

We buy outright for cash, usable parts for distribution to over 20,000 refrigeration service-men customers. Let us put your idle inventories to good use — you will then be helping conserve scarce and precious materials.

The Harry Alter Co.

1728 S. Michigan Ave.
Chicago, 16, Illinois

Change From 'Freon' To Methyl Involves Numerous Problems

(Concluded from Page 10, Column 5)

pressure is necessary to enable the valve to close shortly after the machine stops.

10. Moisture in a refrigerating system is undesirable and destructive whether the refrigerant is "Freon-12" or methyl chloride. In opening a system, withdrawing the charge of "Freon-12" and recharging with methyl chloride, there is opportunity for getting moisture into the system.

It is good practice and may save trouble, time and expense, to install a dehydrator in the liquid line before putting in the new methyl chloride. This dehydrator should be ample in size depending on the size of the condensing unit and other elements of the installation, and should be filled with Silica-Gel, Drierite or Activated Alumina. Do not use Calcium Chloride or liquid drying agents.

11. Methods for detection of leaks are the same for methyl chloride as for "Freon-12." For field use the Halide torch is the best method although soap and water may be used (with an internal pressure of at least 50 lbs./sq. in.)

12. Due to the differences in densities of liquid "Freon-12" and methyl chloride, only about 7 pounds of methyl chloride are required to replace each 10 pounds of "Freon-12." Since the nameplate on the condensing unit is stamped for "Freon-12" and the number of pounds, it should be re-stamped for methyl chloride and the number of pounds shown or this information posted in a conspicuous place near the condensing unit.

EDITOR'S NOTE: The second part of the article "Oil-Refrigerant Mixture Problems" by P. B. Reed which started in the Aug. 30 issue and was to be concluded in this issue, will appear in the next regular-sized issue of the NEWS. It was put over because of the importance of the subject of the substitution of refrigerants.

13. Save the "Freon-12" by discharging it into a cylinder placed in cold water. Be careful in discharging a water-cooled unit not to discharge refrigerant from the condenser fast enough to freeze the water in the condenser.

14. Most evaporators designed for "Freon-12" will perform satisfactorily with methyl chloride. This is particularly true of serpentine coils.

15. When water-cooled units are changed from "Freon-12" to Methyl Chloride it is suggested that they be operated at a somewhat lower condensing temperature, if the condensing water temperature permits, as the decreased condensing temperature will result in increased capacity and may entirely offset the reduction in capacity due to changing from "Freon-12" to methyl chloride even without increasing the displacement.

It is very likely that, in the very near future, condensing unit manufacturers will not be offering units for "Freon-12" and with a "Freon-12" holding charge, except for sub-zero temperature (below —40°) equipment, and for certain other uses, such as in hospitals, on board ship and in military equipment overseas. Saving "Freon-12" for military use is a worthy cause. Let's get behind it 100% and give the authorities complete cooperation in this "Freon-12" program.

Air Conditioning Aids Army Eye Surgeon At Camp Lee Clinic

CAMP LEE, Va.—Air conditioning units have been installed in the Surgery, Eye, Nose and Throat Clinic and at the X-ray Clinic of the Station Hospital at Camp Lee.

Lt. Col. M. H. Todd, chief of surgery, stated that it was the intention to keep the temperature between 80 and 85° F. The system will help offset fatigue experienced by personnel in the surgery under powerful operating lights that generate considerable heat.

In the sterilizing room, a part of surgery, that are two large autoclaves with temperatures of 240° and three boilers whose dials read 212°. Yet the room now is comfortably cool.

Before the unit had been installed, the clinic was aired by a large 30-inch fan that sucked air in from outside through an oil-soaked grillwork that acted like a filter.

The air conditioning unit is the Carrier type, powered by a 25-h.p. motor and producing 50,000 pounds of refrigerated air in 24 hours.

Capt. J. E. Goldstein, chief of X-ray, had this to say about the new air conditioning: "The personnel of this clinic and the 150 to 200 patients will not have to endure the extreme heat any longer. Since each patient has several X-rays taken, the processing of these films is a major problem. Not only will the regulated temperature raise the efficiency of our men, but it will also enable us to keep our developing and fixing solutions at the proper temperatures."

Only the surgical suite of the Eye, Ear, Nose and Throat Clinic is equipped with air conditioning. It is here where the extremely delicate eye operations are performed, where a drop of perspiration from the forehead of the surgeon to the eyeball of a patient may ruin an operation, and subsequently, the sight of a soldier. Major Arnold Peters, chief of the clinic, expects a larger turnover of operations now that the system is in operation.

Let Refrigerators Run In Blackouts, OCD Asks

WASHINGTON, D. C.—Throwing master switches in large buildings during blackouts is not approved by the Office of Civilian Defense on the grounds that inoperative refrigerators, ventilating fans, elevators, and other appliances results only in confusion, operations letter No. 132 to local defense councils, states.

James M. Landis, director of civilian defense, in letter No. 132, which is a question and answer arrangement for regional directors to refer to, explains why question No. 108 (Is blacking out buildings by throwing master switches considered an approved practice?) is given a negative answer and lists the following reasons:

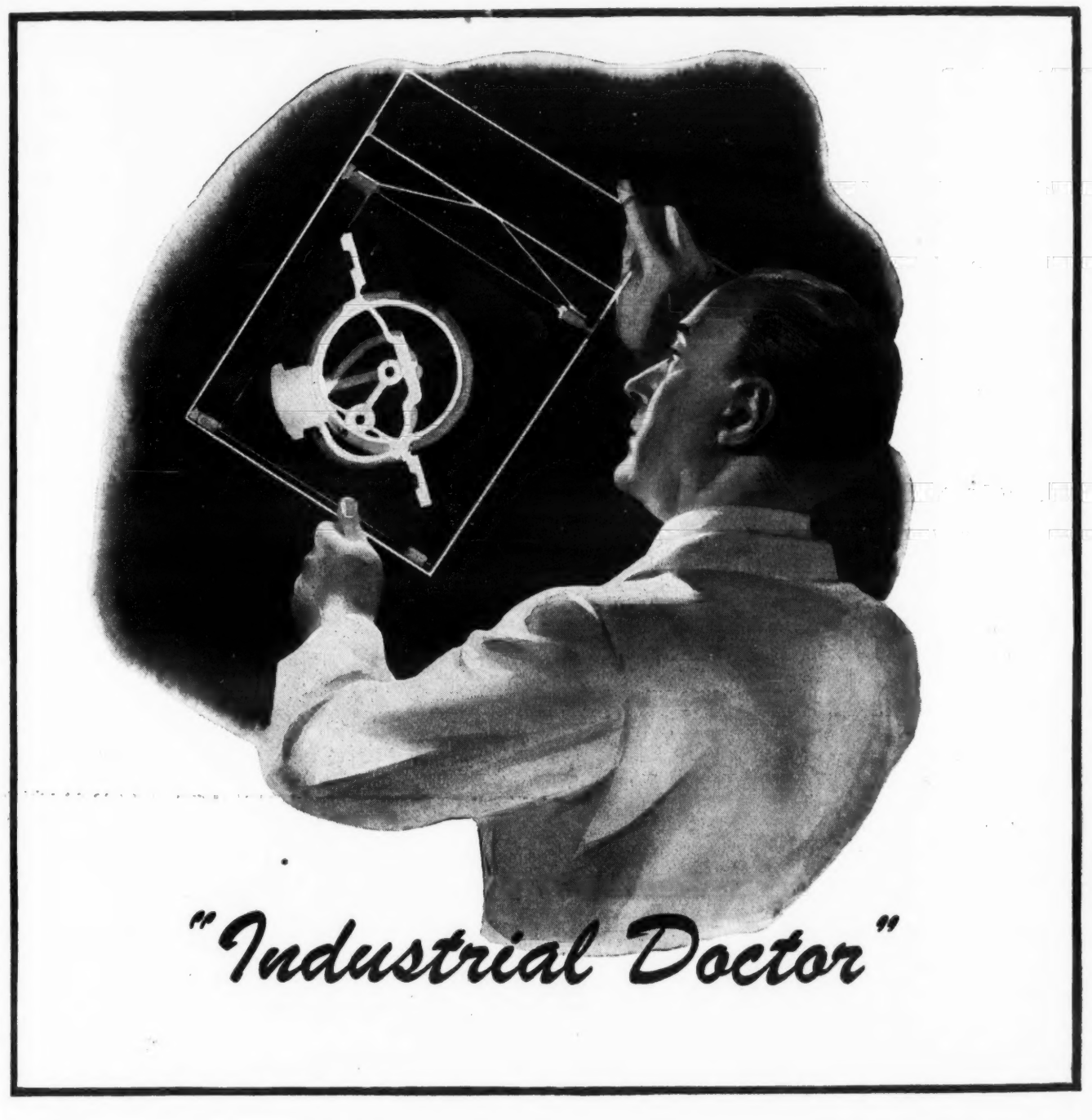
1. Electrically operated refrigerators, radios, and other services such as elevators, electric pumps, blowers, and ventilating fans would be unnecessarily deprived of power, causing not only inconvenience but actual damage to property and foodstuffs.

2. Occupants and tenants who have followed the official directions and made preparations to obscure their windows would be deprived of light, although they comply with blackout requirements.

3. Extinguishment of lights is hazardous and would be conducive to panic and hysteria.

4. Power may be cut off just when it is needed in the care of the very young, sick, and aged persons.

5. It would be substituting an arbitrary method of control in place of the education and discipline of citizens.



Today This "doctor" is giving a physical examination, not to a part of the human body, but to a part for an aircraft engine, a tank or a gun.

The X-ray is proving to be a most important tool in industry as well as in the field of medicine. Vital parts of all kinds for our mechanized equipment are having their pictures taken by modern, high-power X-ray machines, to show up stresses, strains, and possible flaws. No chances can be taken when the lives of our boys and the successful prosecution of the war is at stake.

And, no chances are taken in the subsequent developing and handling of the sensitive X-ray films, to make certain that they will show every minute detail. Accurate temperature control of solutions in air conditioned, dustless laboratories insure the quality of the finished film so that proper diagnosis can be made, and stresses and strains carefully studied. Accurate results would be exceedingly difficult to obtain without the aid of refrigeration and air conditioning.

TOMORROW New developments and experience gained in the manufacture of war equipment will be applied to the many products of peace. Super-powered X-ray machines capable of looking through heavy steel will give us new insight into the operation of mechanical equipment, and thus make possible better design and longer life.

In the science of medicine the X-ray will help guide doctors along the road toward the goal for which humanity is constantly striving, the eradication of disease and the extension of man's span of life.

In countless ways, refrigeration and air conditioning will contribute to the health and comfort of the human race.

Detroit Expansion Valves and Controls are doing their part in this important application of refrigeration by accurately controlling the temperature on special X-ray developing tanks to assure the highest standard of the finished film.

Wherever dependable refrigeration is needed, there you will find "Detroit" refrigeration products. If you have a refrigeration problem, let us help you.

DETROIT LUBRICATOR COMPANY

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"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators

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SERIES 4200

AVAILABLE WITHOUT PRIORITY

CASES WITH SCALE SHELF, WRAPPING SHELVES & COILS

GLOEKLER MANUFACTURING CO.

ERIE - PA.

Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)

Although a push through Burma seems to be in the cards for the autumn months, it is being said that the real way to bring Japan to her knees is through the air.

And even the reopening of the Burma road will not be sufficient to transport the gasoline and supplies needed to support a full-scale bombardment of Japan from Chinese bases.

So, maybe the truly heavy attacks will have to come from some other direction.

Cycle-Weld Technique

So far we have been unable to get permission to publish detailed information on the new cycle-welding technique for the benefit of thousands of subscribers who are engaged on war production work in which this revolutionary technique can be used.

Cycle-welding is a method of bonding plywood to metal under heat and pressure. Joints so made show amazing strength.

If you can't wait for our forthcoming article, it will perhaps be possible to refer you to proper sources.

Sabotage?

Thanks to the vigilance of J. Edgar Hoover and his sharp young men, the United States has not been subjected to the large-scale sabotage which has been feared. In fact, there has been darned little small-scale stuff.

However, it is known that the German school for sabateurs is accelerating its graduations, and the suspicion is that attempts will be made to land these trained saboteurs on our shores—especially since the submarine has failed in its task of locking us within our continental confines.

One shouldn't start looking over one's shoulder, however. The odds are still high against any disastrous wave of sabotage. Everybody agrees that the FBI can be depended on to keep the situation well in hand.

Home Front Better

All those worries about progressive deterioration on the American home front are now a little less severe—with the migraine exception of manpower.

Food outlook is much better, for example. For one thing, the Army has hoarded about all it can accumulate with existing warehouse and cold storage space. And, civilian hoarding is on the wane. Those last-minute rushes to buy up canned goods with unused points are slackening.

And, the Victory Garden campaign was an enormous success. (This presages some interesting future developments in the refrigeration market, which we plan to discuss at a later date.)

As for meat, it's coming onto the market now in greater quantities, as predicted here awhile back. Next year it is expected to be tighter because of feed shortage, although new types of feed utilized from waste products—such as distillers' mash and brewers' waste, along with fruit peel from the canneries—may alleviate this condition somewhat.

Big increases in the import of bananas and other tropical fruits from Latin America may be expected, too, now that the improved shipping situation will allow us to bring in the Latin American crops we have been buying but not eating.

As for price control, that's coming along much better than predicted. More and more it is being recognized that the best way to close the "inflationary gap" is to provide more consumers goods. The ingenuity of American retailers in finding and stocking consumers goods from all all sorts of odd sorts is amazing the government economists.

But the manpower problem gets worse and worse.

Amateur Diplomacy

The war is going well, too, as everyone can see. But the diplomatic front is the new one on which we are taking a licking. Uncle Joe Stalin is proving himself to be shrewder than Churchill-and-Roosevelt had bargained for. He has put them on the defensive, and they know it.

Stalin is now doing as successful a bluffing job as Hitler did in those days when he was gobbling of territory without firing a shot. Like Hitler had then, Stalin now has what poker players call "a powerhouse in his mitt." He can make a separate peace. And that would really lengthen the war with Germany.

Uncle Joe is said to believe that our notions of "unconditional surrender" mean that Churchill and Roosevelt mean to write the peace; that the Atlantic Charter is a laugh; that British Imperialism is on the prowl again; and that we are letting him fight the war while our enormous armies languish inactive.

Translated into American, he is saying: "Put up or shut up."

Postwar Employment

Both government soothsayers and the potent Committee for Economic Development (which some day may deserve quite a spot in history) are privately agreed on one thing: we may have large-scale unemployment in the midst of a merchandising boom in the decade following the war.

All the signs point toward the boom. Other signs point toward the unemployment problem. This seeming paradox is largely centered around the problem of creating jobs for demobilized soldiers, and pushing the women back into the kitchen.

All hands agree that if we work fast enough to employ the demobilized soldiers and sailors, they can help take care of the woman problem—by setting up their own homes. They also agree that if Our Boys aren't employed pronto, there'll be hell to pay.

It is expected that agriculture will continue to enjoy its unexampled prosperity for at least three years following the war's end, and that it can absorb another million or so more workers. Home construction should boom mightily, and will be an active employer of discharged soldiers and sailors. Salesmen will be needed again, and the boys with ribbons on their chests should have high priority here.

But relocating from six to nine million men will not be easy, particularly since so much "small business" will have been liquidated. Big business will have its labor force on Demobilization Day—more labor than it can profitably keep employed.

The larger the Army, the greater the re-employment problem, because for every man inducted, at least one woman or "unemployable" must be found as a replacement.

Refrigerated Cargo Planes

Fleets of giant refrigerated cargo planes which will bring the world's produce to the American dinner table hours instead of days after it has been gathered may be one of the early results of wartime advances in refrigeration and air conditioning, predicts S. E. Lauer of York.

Super refrigerated air freighters are possible even now because of the higher efficiency of refrigerants and decrease in size of the equipment, a development brought on by military needs. Such new equipment should play a major role in solving the nation's food problem through greater production of quick frozen and dehydrated foods and storage facilities for preserving produce.

In industry air conditioning is now an indispensable part of hundreds of delicate and exacting manufacturing operations for such products as optical lenses, electronics tubes, etc.

In performing this essential job, however, air conditioning has introduced a new form of working comfort which has stepped up efficiency and generally increased morale. In the modern factory and home of postwar years, air conditioning may well become standard equipment as a result of workers' appreciation of air conditioned plant conditions.

17 Years Old

This issue happens to mark our 17th anniversary. It is being passed by without fanfare, but we hope people are aware the NEWS is "growing up."

Our friend, neighbor, and tenant, "Automotive News," recently celebrated its 18th birthday; and on that occasion Publisher George Slocum penned some remarks which so aptly fit our own case that we quote:

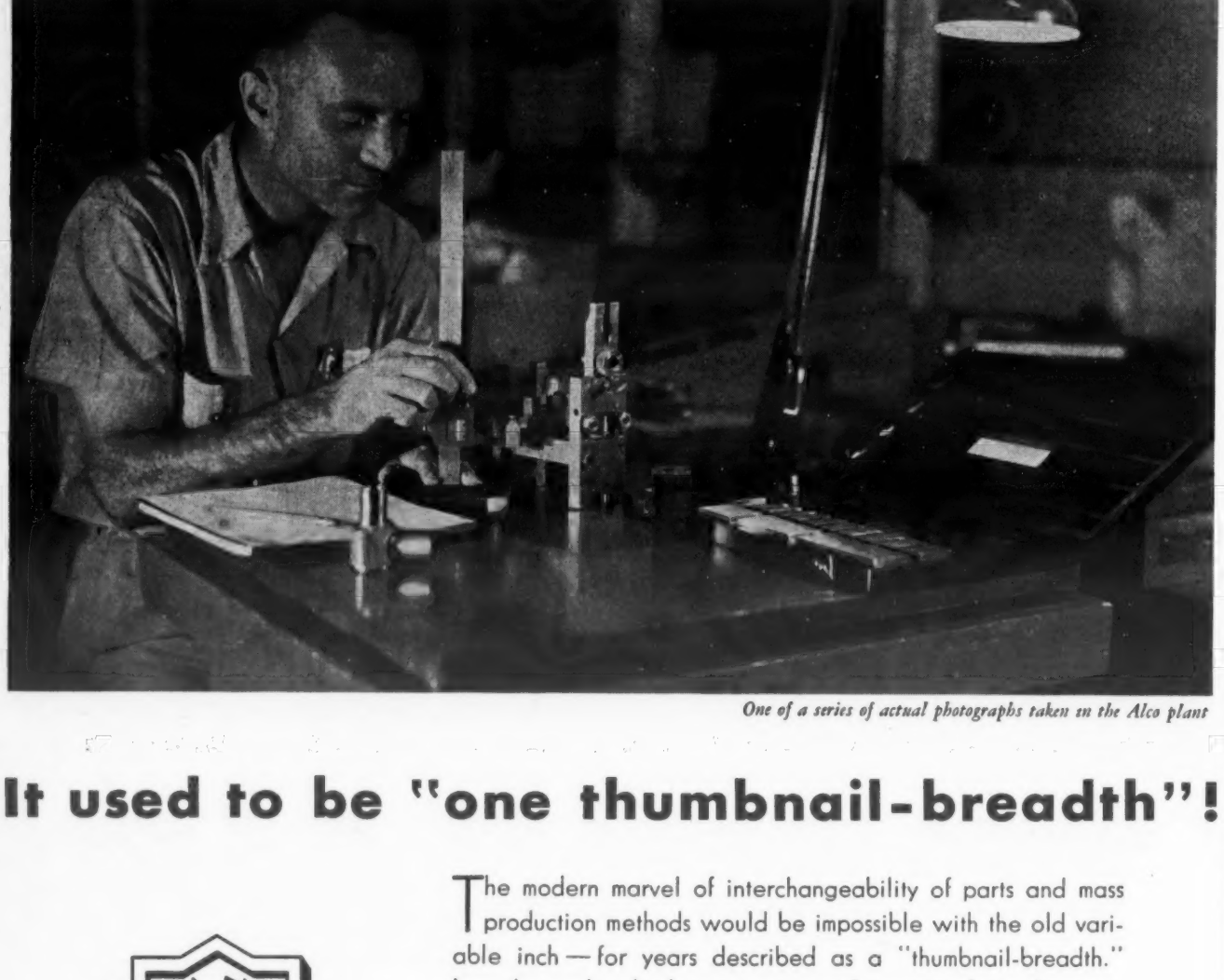
"Automotive News has a lot to be proud of in its 18 years of service to 'America's Number I industry' and not much, now that we come to think of it, over which we have to hang our head in shame.

"It took the manufacturers in this industry quite a while to find out that we had only one objective, i.e.: To collect and print the unbiased news, **which was news**, just as rapidly and independently as we could.

"It took us even longer to convince the rank and file of the dealers in this country that we were not actually owned by one or another or all of the manufacturers.

"Ford dealers thought we were owned body and soul by GM. Chrysler dealers thought we might be part and parcel of the Ford organization. Dealers who sold cars and trucks built by the independents were not too sure but what we were published by the big three."

How Long Is an Inch?



One of a series of actual photographs taken in the Alco plant

It used to be "one thumbnail-breadth"!

The modern marvel of interchangeability of parts and mass production methods would be impossible with the old variable inch—for years described as a "thumbnail-breadth." Less than a hundred years ago metal parts made in the same shop attained some degree of interchangeability, but not with parts made elsewhere.

Not until the first World War did universal precision gaging come into its own with the perfection of finely lapped and seasoned steel gage blocks, accurate to millionths of an inch. Such blocks are used to check working and inspection gages of all kinds, jigs, and machine set-ups.

Both "Jo-Blocks," illustrated above, and Hoke Blocks are used in the Alco plant to maintain fine precision in the making of Alco Valves. Such accuracy assures precise valve performance, dependability, and long life. Furthermore, replacement parts, if needed years later, are sure to match the original fit.

ALCO

Designers and Manufacturers of Engineered Refrigerant Controls

ALCO VALVE COMPANY—853 Kingsland Avenue, St. Louis, Missouri

*That is, everyone in the refrigeration industry in South Carolina, Georgia and Florida. If you are in that territory, you're invited to get in touch with Mr. Gullatt, 29 Haynes St., N.W., Atlanta, Georgia, any time you want speedy, efficient Ansul service.

ANSUL CHEMICAL COMPANY
Agents for Kinetic's "FREON-12"
MARINETTE • WISCONSIN

Orders Filled the Day Received

AC-21

TWENTY-EIGHT YEARS OF KNOWING HOW

Plumbing & Heating Repairs Now Carry AA-5 Parts Rating

WASHINGTON, D. C.—The preference rating assigned for repair and replacement of plumbing and heating equipment was raised to AA-5 from A-10 by WPB on Aug. 23 in an amendment to Order P-84. Action was taken to bring this rating in line with ratings assigned for needs of similar importance.

The revised order requires a certification of need by the ultimate consumer for purchase of plumbing and heating equipment or parts costing over $5. Previous restrictions required certification only when cost of equipment was $50 or more. Any person making sales of items costing less than $5 may use the AA-5 rating to replace his stock.

Under the amended order the AA-5 rating may be used by a consumer to purchase parts or equipment (other than stokers) to convert oil-burning or gas-burning equipment to solid fuel burning equipment.

Persons wishing to purchase steel and wrought iron pipe and steel sheets for use in making repairs may use the CMP symbol MRO (Maintenance, Repair and Operating supplies).

The ratings authorized by CMP Regulation 5 may be used for plumbing and heating repairs and maintenance only by those industries listed in Schedules I and II of that regulation.

Also on Aug. 23 a general revision of Plumbing and Heating Equipment Order L-79 was announced by WPB.

The revised order restricts sale or delivery of plumbing and heating equipment, as defined in the order, from the manufacturing level down to the ultimate consumer except on an A-10 higher rating. Previous restrictions required an A-10 or higher rating only to cover sales to the ultimate consumer.

The revised order extends restrictions to cover all except non-metallic plumbing and heating equipment. Formerly, only equipment containing 50 percent or more metal by weight was included under restrictions of the order.

All items of metal plumbing and heating equipment which cost the purchaser less than $5 are exempted from the restrictions. Previously the order specified that items costing less than $5 could be sold without ratings provided such sales were part of an order totaling no more than $10.

Domestic cooking equipment and domestic heating stoves listed in OPA Ration No. 9A have been removed from the restrictions of Order L-79.

Airo Suppy Catalog Was Checked on 'Availability'

CHICAGO — Special effort to insure that all items listed in the new 1943 Victory parts catalog of Airo Supply Co. here will be available was made by careful contact with manufacturers before publication, according to L. C. Keely, manager of the firm.

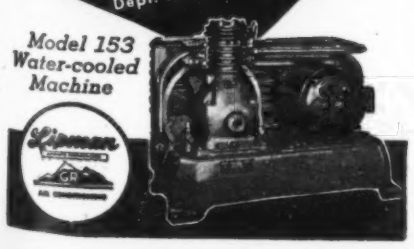
Cross-references designed to make finding of needed parts easier and regrouping of pages so that different manufacturers' specifications can be more easily compared mark the revised catalog. The book is available free to service men but copies are limited due to war restrictions, Mr. Keely warned.

The Machine For Your Next Job...

If it's a refrigeration job ...no matter how big or how small...we can supply Lipman equipment to fit the specifications. Let us work with you.

GENERAL REFRIGERATION DIVISION
Yates-American Machine Co.
Dept. AC-3, Beloit, Wis.

Model 153 Water-cooled Machine



Bendix Appliances To Redeem Class A Stock Before 1944

SOUTH BEND, Ind. — All of the 21,007 outstanding shares of Class A stock issued by Bendix Home Appliances, Inc. will be redeemed by Nov. 30 of this year, according to a proposal recently announced to stockholders by J. S. Sayre, president.

Consummation of this plan will eliminate all debt and capital with the exception of the common stock, Mr. Sayre said. During the past two years, he added, Bendix Home Appliances has retired an $80,000 mortgage on the plant, $508,000 of 5% convertible debentures and 53,815 Class A shares, while an additional 47,018 Class A shares were converted into 141,054 shares of common stock.

"Due to the war, the company has reduced the book value of patents, licenses, development and litigation expense to a nominal value of $1," Mr. Sayre said.

Sept. 30 Deadline For Report on Idle Steel

WASHINGTON, D. C.—The Steel Recovery Corp. will continue to accept reports on inventories of idle steel only until Sept. 30, 1943.

Inventory reports postmarked on or before that date will be catalogued as subject to the special government "higher-than-scrap" prices established under the steel recovery program for materials which cannot be used in their present form and which, if needed in the war effort, are purchased for remelting. No reports postmarked after Sept. 30, will be processed.

Under this program all known and probable holders of idle inventories of steel have been canvassed by special reporting forms developed for this purpose. Forms for reporting various materials such as plates, bars, structurala, are available at WPB, c/o Steel Recovery Corp., 5835 Baum Blvd., Pittsburgh, Pa.

Employes Can Use CMP Rating on Safety Items

WASHINGTON, D. C.—Employes heretofore dependent on employers for the purchase of safety equipment on priority may now buy such equipment themselves, using their employer's preference rating, the War Production Board ruled recently in Direction 11 to CMP Regulation 5.

Safety equipment so purchased must be used exclusively in the employer's business and must be required by the employer. Employers will fill out a preference rating certificate similar to that provided for in Direction No. 9 to CMP Regulation No. 5 covering the purchase of hand tools. The certificate will be presented to the seller by the employe buying the equipment.

The following items are considered as "safety equipment" by the WPB "when they are specifically designed and used to furnish protection against specific occupational hazards (other than weather)":

1. Asbestos clothing.
2. Gauntlet type welders' leather gloves and mittens, and electricians' leather protector or cover gloves.
3. Metal mesh gloves, aprons, and sleeves.
4. Other safety leather gloves or mittens, but only if steel stitched or steel reinforced.
5. Plastic and fiber safety helmets.
6. Safety clothing impregnated or coated for the purpose of making the same resistant against fire, acids, other chemicals or abrasives.
7. Safety industrial leather clothing other than shoes, gloves, or mittens.
8. Safety industrial rubber gloves and hoods and linemen's rubber gloves and sleeves.
9. Gas masks and canisters.
10. Respirators.
11. Face and eye shields.
12. Welding helmets and shields.
13. Goggles.
14. Foot and shin guards (not including safety shoes).
15. Safety belts and harnesses.
16. Protective creams.

PENN ADVERTISES TO SUPPORT THE INDUSTRY

Another of the many dramatic ways in which refrigeration and air conditioning are serving war needs is presented in this full page advertisement in the July 24th issue of Business Week. The same message will appear in later issues of Fortune and Time, as a part of Penn's consistent campaign to sell influential America on the importance of your business.

FOOD SAVING
MUST FOLLOW FOOD RAISING

From farm...to market...to table, a major portion of the food we raise requires refrigeration, to keep it wholesome, to protect its vitamin content, to prevent loss through spoilage.

The needs of our armed forces, our civilian workers, and our allies promise a strain on even record-breaking food production. So *food saving* is as important as food raising. The *refrigeration equipment* of the nation, in warehouses, on trucks, trains and ships, and in stores and markets *is being taxed beyond normal capacity* to protect health and prevent food spoilage loss.

As a manufacturer of automatic controls, Penn is doing everything possible to help keep commercial refrigeration equipment functioning efficiently. Important in this job is Avrgaire, the Penn control for all "above freezing" applications, with the exclusive "cold anticipation" feature. Avrgaire holds temperature closely

at desired levels, and maintains correct humidity inside refrigerators to prevent food loss through shrinkage or "sliming."

Avrgaire and other Penn controls are being supplied where needed, under the established priority regulations. *If you have any problems involving automatic control,* in connection with present or future production, Penn engineers will gladly discuss them with you without obligation. *Penn Electric Switch Co., Goshen, Indiana.*

PENN

A Star . . . for continued Excellence in Production

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Air Conditioning & REFRIGERATION NEWS

Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, *Founder*

Published Every Monday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $4.00 per year; 2 years for $7.00. All other foreign countries: $6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

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Editor and Publisher

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VOLUME 40, NO. 2, SERIAL NO. 756
SEPTEMBER 13, 1943
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They'll Do It Every Time

By Jimmy Hatlo

SWEET, LIKE THE BIRDIES SING
BEG PARDON-COULD I SEE MR DESKTHUMPER ?
WELL-UH--HE REALLY ISN'T SUPPOSED TO BE IN BUT I THINK HE MIGHT SEE YOU-OO. WON'T YOU HAVE A CHAIR? LET ME TAKE YOUR HAT AND COAT!
SHE GAVE THE LITTLE GUY THE OLD HEAVE-HO LIKE HE WAS POISON OAK BUT PRETTY-BOY GETS A CITY HALL RECEPTION!
I KNOW THAT BIG LUG HE'S A PROCESS-SERVER FOR THE LAWYERS WHO ARE SUING THE OLD MAN FOR BACK ALIMONY
ROSIE WOULD LET IN A HUNGRY LION, IF HE HAD NICE EYE-LASHES!
OL STONEWALL ROSIE THEY SHALL NOT PASS-UNLESS THEY'RE TALL, DARK AN' HANDSOME..
INFORMATION
THEY CALL THEM RECEPTIONISTS— BUT YOU GOTTA BE A COLLAR-AD OR NO RECEPTION
Thanx to EDDIE WEST, PASSAIC, N.J.
JIMMY HATLO
12-28
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America's Secret Weapon

SHORT-WAVE radio dialers often hear boasts from Berlin of a new "secret weapon." In one of Life's recent reports this weapon is identified as follows:

"The Wilhelmstrasse is said to be boasting in particular about one secret weapon—frigid compressed-air bombs to be dropped on England. The bombs have to be carried in refrigerators and the Wilhelmstrasse says that everything is ready except the refrigerators."

It would be an interesting note if Germany failed in its final kick of desperation because the Nazis had long refused to see anything of importance in the science of refrigeration. That this negative attitude toward refrigeration exists is something on which the editor can give a bit of testimony.

GERMANY BACKWARD IN ONE SCIENCE, AT LEAST

Our world-wide tour of foreign markets for American refrigeration and air conditioning—before all the shooting started—afforded a pretty good look at the German refrigeration industry, such as it was. We visited the only German manufacturers of such products—AEG, DKW, Bosch, Siemens-Schuckert, and a few smaller fry—saw what they made, heard their problems, met their executives.

Universally we heard the complaint: "The government is starving us." It seems that the Nazis placed the development of refrigeration far, far down the list on priorities for manpower and materials.

NAZIS THWARTED REFRIGERATION MAKERS

The story went that the Nazi bureaucrats were working toward the gradual reduction of perishable foodstuffs in the German diet. They were going to condition the Germans to a grain-and-potato diet as much as possible, with the emphasis all away from meats and milk.

As for other perishables, well, Germany is a cool country, and the old window-sill box would have to do. True, they did make a few refrigerators. But they weren't worth a continental, as I was told repeatedly in Denmark, Austria, Hungary, and even Germany itself. Their materials were inferior, and their knowledge of the science limited.

REFRIGERATION AUTHORITY ADMITS POLICY

Prof. Rudolph Planck, foremost of the German refrigeration engineers, told us the same story. Progress in the art of refrigeration, he admitted sadly, would have to come from other lands. And it was true even then, as now, that practically all refrigeration equipment used by the world was manufactured in America.

What the Nazis didn't realize was that refrigeration has its uses other than for the storage of perishable food. We didn't realize it either—except on a minute scale—until the Japs struck us at Pearl Harbor.

But we learned fast. We learned that close-tolerance machining (and nearly all war production comes under that category) is vastly accelerated through the use of controlled temperature. We learned that refrigerated control of explosives manufacture and shell-loading makes possible our super-accurate artillery fire, and the absence of duds. We learned about shrink fitting, rivet cooling, and metals ageing. We learned, and learned, and learned—all the things which readers of AIR CONDITIONING & REFRIGERATION NEWS know so well now.

AMERICA HAS VIRTUAL MONOPOLY ON PRODUCTION OF REFRIGERATION ITEMS

Result was an almost unprecedented demand for refrigeration equipment. But America was ready, because we already had some 97% of the world's refrigeration equipment productive capacity, and virtually all the refrigeration engineering know-how.

Refrigeration, then, in a sense became our secret weapon. It was one thing we had nobody else had—almost as effective a monopoly as that we have on helium.

And if now the Nazis are belatedly realizing that refrigeration is a vital war tool, it's too late. They don't have either the refrigeration manufacturing capacity or the engineering talent to make use of that discovery.

But as for America, well, we have some new things up our sleeves, too, and refrigeration makes them possible!

LETTERS

GRAB HIM, BOYS! 1ST COME, 1ST SERVED

22 Gould St., Verona, N. J.

Sirs:

The writer is a mechanic instrument maker, good background of physics, practical knowledge of Ohm's law, etc., and is anxious to acquire refrigeration service experience on household units.

While there are trade and technical schools in New York City, to attend them would involve three hours or more travel time, besides a substantial tuition fee. As a practical mechanic the school idea is not so "hot."

I am within six miles of Newark, N. J. and would be willing to give three hours time free nightly in a service shop until such time as I could prove my usefulness. Am 55 years of age, no physical handicaps, and could be immediately useful as an expert silver solderer.

Would appreciate any suggestion you might offer as to the best method of making this kind of contact.

Joseph B. Donahue

REPLACEMENT SCHEDULES

The Electric Institute of Washington
10th and E Streets, N.W.
Washington, D. C.

Editor:

I was very much pleased with your presentation of our story on the Group Replacement Schedule.

I cannot help but feel that adoption of such a procedure in other areas would be helpful.

Even with the new "critical list" under which refrigerator repairmen are classed as "necessary men," I am convinced there will be considerable difficulty with local boards who have their own individual quotas to meet and who are not familiar with the essentiality of refrigerator service.

Of course, State Selective Service offices may also be difficult to sell on the idea of practically permanent deferment for refrigerator repairmen, but in dealing with state offices, there is a much better chance of getting approval, and once this is done, it should cover local areas within the state.

Thanks again for your interest. Of course, our local job has been done and my personal interest, as you realize, is in spreading the possibility of such a procedure into other areas.

J. S. Bartlett, Managing Director

NO HELP; CLOSING UP; WANTS JOB

Ross Refrigeration Service
310 W. Cleveland Ave.
Ponca City, Okla.

Editor:

The writer is looking forward to the day when it is going to be very hard or impossible to operate as a service agency; will you please deliver my letter to the attention of your employment department?

I have been in the refrigeration sales and service business since 1925. Have been associated with Frigidaire as a major commercial dealer since 1932. Have also had experience during this same period of time in small light plants, water pumps, small appliances and radio.

My shop has been a well equipped one and my parts inventory has been above the average; but at present, I am unable to get any help so I would like to offer my services with any major company in the refrigeration or air conditioning industry.

R. E. Ross.

CLEANED OUT BY DRAFT

Northern California Ice Machine Co.
Northern Division Triad Engineering Co.
Oakland, Calif.

Editor:

As you are a nationally known organization. I feel that your consideration may be most influential in this problem. For you can well emphasize the situation that we in the refrigeration and air conditioning industry are now facing.

Surely no other organization in this field is in such close contact with every problem in the industry as is yours. The information which you acquire and pass on to we of the industry, is most helpful to us, and I feel that your opinion of its being an essential industry to the war effort would be considered. I myself, represent just a small company, whose job it is to do its best in gaining victory.

This company has been doing business in the bay region and its outlying districts for the past seven years. The last three years we have devoted entirely to commercial installations and servicing. Since the war, we have been contracting work with the Navy and the Maritime Commission. We own and operate six company trucks and have a dealership with the Carrier and the York corporations.

Up to the present time I have lost seven men to the Armed Forces of the United States. I have tried in every way possible to replace them, but due to the extremely high wages which are paid in defense plants, it is impossible to obtain a good engineer.

Because of the great number of shipyards and other defense plants in the region, our locality is very much over-crowded and therefore much more food stuff is necessary. Refrigeration and air conditioning is essential to the war effort. Foods for these workers and for the entire population must be properly preserved. This is especially important because of the shortage of farm laborers to harvest the crops to keep our markets supplied.

My point is, that I should appreciate your assistance in acquiring a deferment for my man. He has been with me for the past five years and a better engineer cannot be found. He is highly skilled in every process of installations and maintenance of refrigeration and air conditioning equipment and thoroughly understands all systems. If he is drafted I shall just as well close my shop doors, since I cannot continue government inspected work with inefficient help.

I thank you very kindly for your consideration and assistance in this urgent matter.

Henry B. White.

DON'T DELAY

719 Echeles
Memphis, Tenn.

Editor:

In these times REFRIGERATION NEWS comes in handy and I can't get along without it. It is one of the best papers out. So please don't delay in sending it.

FLOYD RIEBE

Home Economists' Ideas Worth $1,000 Monthly In Kelvinator Contest

To help Kelvinator put the finishing touches on its project for awarding $1,000 monthly in war bonds to home economists for "helps for homemakers" ideas, the five-member board of judges, including Dr. Louise Stanley, Mrs. Philip L. Crowlie, and Miss Gertrude Warren, ate dinner and discussed plans with Kelvinator officials at the Hotel Mayflower in Washington, D. C. last June.

* * *

Seek Solutions to Wartime Homemakers' Problems

DETROIT—An "idea exchange" project promising prizes of $1,000 in bonds monthly has been announced by Nash-Kelvinator Corp. as a means of solving wartime homemaker's problems.

Offering to home economists an opportunity to contribute their outstanding suggestions, Nash-Kelvinator has selected a board of judges to decide on the 40 best "helps for homemakers" each month.

Through the magazine, "What's New in Home Economics," a timely project chosen in advance by a panel of Washington authorities will be published and 40 war bonds will be given to home economists for their ideas and suggestions on the chosen subject.

Kelvinator will then publish each month's selections in a series of pamphlets entitled, "Helps for Homemakers." These will be available from Kelvinator to all home economists throughout the country for use in their wartime work and for distribution to individual housewives.

The five-member board is made up of the following men and women: Dr. M. L. Wilson of the nutrition and food conservation branch of the food distribution administration; Dr. Louise Stanley, Agricultural Research Administration; George E. Farrell, U. S. Dept. of Agriculture; Miss Gertrude Warren, senior 4-H group organizer; and Mrs. Philip L. Crowlie, typical American housewife, OPA.

In announcing the "Kelvinator Wartime Idea Exchange" C. T. Lawson, general sales manager of Kelvinator said, "Utility companies and appliance dealers who have been advised of the new Kelvinator project, have endorsed it strongly. Homemakers are constantly inquiring of utilities, household furnishing marchants, and appliance dealers generally, seeking specific, practical solutions to wartime problems. The series of Kelvinator pamphlets, 'Helps for Homemakers,' will provide a really concrete answer to many of these questions."

Army Frowns on OCR Move to Earmark Some Goods For Civilian Channels

WASHINGTON, D. C.—The Army has disapproved of a proposed directive drafted by the Office of Civilian Requirement which would earmark for civilian use specific percentages of goods produced by the manufacturer from controlled materials.

Objective of the order was to channel into civilian distribution all goods produced for that purpose. There is no guarantee at present that such goods may not be diverted to the Army, Navy or other government procurement agencies through higher ratings which are available to civilian purchasers.

The directive written by OCR instructed producers to distribute civilian goods in the percentages fixed by the allocations. It further stated:

"You are to disregard preference ratings (except AAA) to the extent necessary to comply with this direction."

Following the Army action, OCR is understood to be drafting a revised directive which would not set aside preference ratings at the distribution levels, but would provide that distributors who have in the past experienced difficulty in directing into civilian channels all goods produced for that purpose may appeal to WPB for relief in this situation.

The directive disapproved by the Army had been approved and issued by OCR but read as follows:

"You are directed to ship during the quarter beginning Oct. 1, 1943—percentage (dollar value or units) of your first shipment of the products identified by the above allotment number to wholesalers, retailers, or other civilian purchasers in the United States.

"You are to disregard preference ratings (except AAA) to the extent necessary to comply with this direction.

"This directive does not modify Priority Regulation No. 1, except to the extent required to permit you to make the percentage of shipments to civilian purchasers specified above.

"Such shipments should be distributed throughout the quarter as evenly as practicable. All orders above the percentage specified must be filled in accordance with preference ratings, regardless of purchasers.

" 'Civilian purchasers in the United States' means all purchasers except directive purchases by the U. S. Army, or Navy, the Aircraft Resources Control Office, the United States Maritime Commission, or any person buying for directive export.

"If, for any reason you find that compliance with this directive, would not be practicable, or would interfere with important war contracts, you should report the facts to the appropriate industry division of the War Production Board."

New Appliance Dealership In Mobile, Ala. Will Operate Out of Service Station

MOBILE, Ala.—The Delaney Specialty Co., is a new concern opening here to handle sales and service for Frigidaire products, Bendix washers, Maytag washing machines, Philco radios, Ward floor furnaces, Superior floor furnaces, Tappan gas ranges, Ruud water heaters and other products. The concern will operate from a gasoline service station and will also sell gas and oil, tires, etc.

E. Delaney, proprietor of the concern, has been for years associated with the Quigley Specialty Co. of this city, and is a strong believer in the setup whereby electrical appliances are sold from a drive-in station. He stated that he would give service on all of the appliances for which he is distributor and expected to begin sales as soon as possible after the war.

Crosley Appoints 3 New Distributors

CINCINNATI — Announcement of three new distributors for Crosley Corp. has been released by J. H. Rasmussen, Crosley's commercial manager.

The companies named are American Wholesalers, in the nation's capital; National-Rose Spring & Mattress Co., in Memphis, Tenn.; and O'Keefe Motor Co., of Carrier Mills, Ill.

American Wholesalers, headed by David L. Krupsaw, will supply Crosley parts and complete service on household appliances. The company occupies a 40,000-sq. ft. building with a railroad siding, in downtown Washington.

National-Rose Spring & Mattress Co. began in 1910 as the National Bedding Co., and purchased the Rose Spring & Mattress Co. in 1929. President of the company is James H. Patton, one of the two original partners.

The company employs 250 people and manufactures mattresses for the armed forces. It has a furniture jobbing department and distributes several lines of floor coverings, operating in extensive territory surrounding Memphis. Its 1942 sales figures exceeded $2,000,000.

The Carrier Mills firm is headed by Clyde O'Keefe, who started as a Chevrolet dealer in 1923. He added the Crosley line in 1939, and during the next year raised a new building for his company, which now controls also a subsidiary, the Builders' Lumber Co.

Brownson Will Manage Laundry Department For Westinghouse

I. FRANK BROWNSON
Will direct manufacture and sale of laundry equipment for Westinghouse after the war. He is now regional co-ordinator, contacting with government agencies.

* * *

MANSFIELD, Ohio — I. Frank Brownson has been appointed manager of the Laundry Equipment department of Westinghouse Electric Appliance division, T. J. Newcomb, sales manager, announces.

While Brownson currently is regional co-ordinator, acting as contact man with government agencies for Westinghouse, he will direct both the manufacture and sales of Westinghouse laundry equipment upon assuming his new duties at the close of the war.

Number One product to be pushed at that time, according to Newcomb, will be the Laundromat, the division's automatic washing machine. "This machine, of course, will be supplemented by a complete line of conventional laundry equipment," says Newcomb.

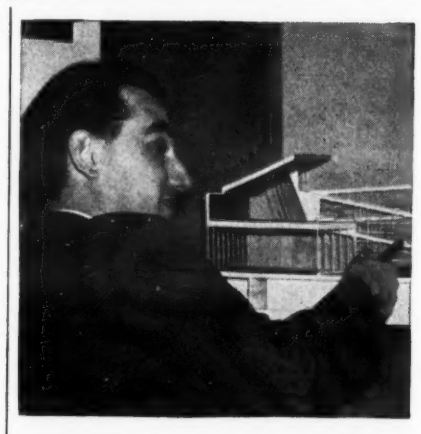
Brownson came to the sales department at Mansfield three years ago from the Canadian Westinghouse Co. where he served as field manager for the distribution of Westinghouse electrical appliances and radios.

Anchor Dist. Sales Jump 11½% Over June, 1942

PITTSBURGH — Anchor Distributing Co., headed by Harold W. Goldstein, reports an increase of 11½% in June sales over June a year ago.

As distributors of refrigerators and other electrical appliances such as washers, radios, sewing machines, irons, etc., the organization has found its service department well worth maintaining in spite of war conditions.

Early this year Anchor supplemented its regular lines with toys, dolls, housewares, pictures and gifts. According to Goldstein, "No serious curtailment of selling activity has been experienced because of the diversified line of goods being distributed."



George Nelson, one of the managing editors of Architectural Forum, is also one of the most creative of today's architects. His most recent achievement: The interesting, original Sherman Fairchild New York town house, designed in partnership with William Hamby.

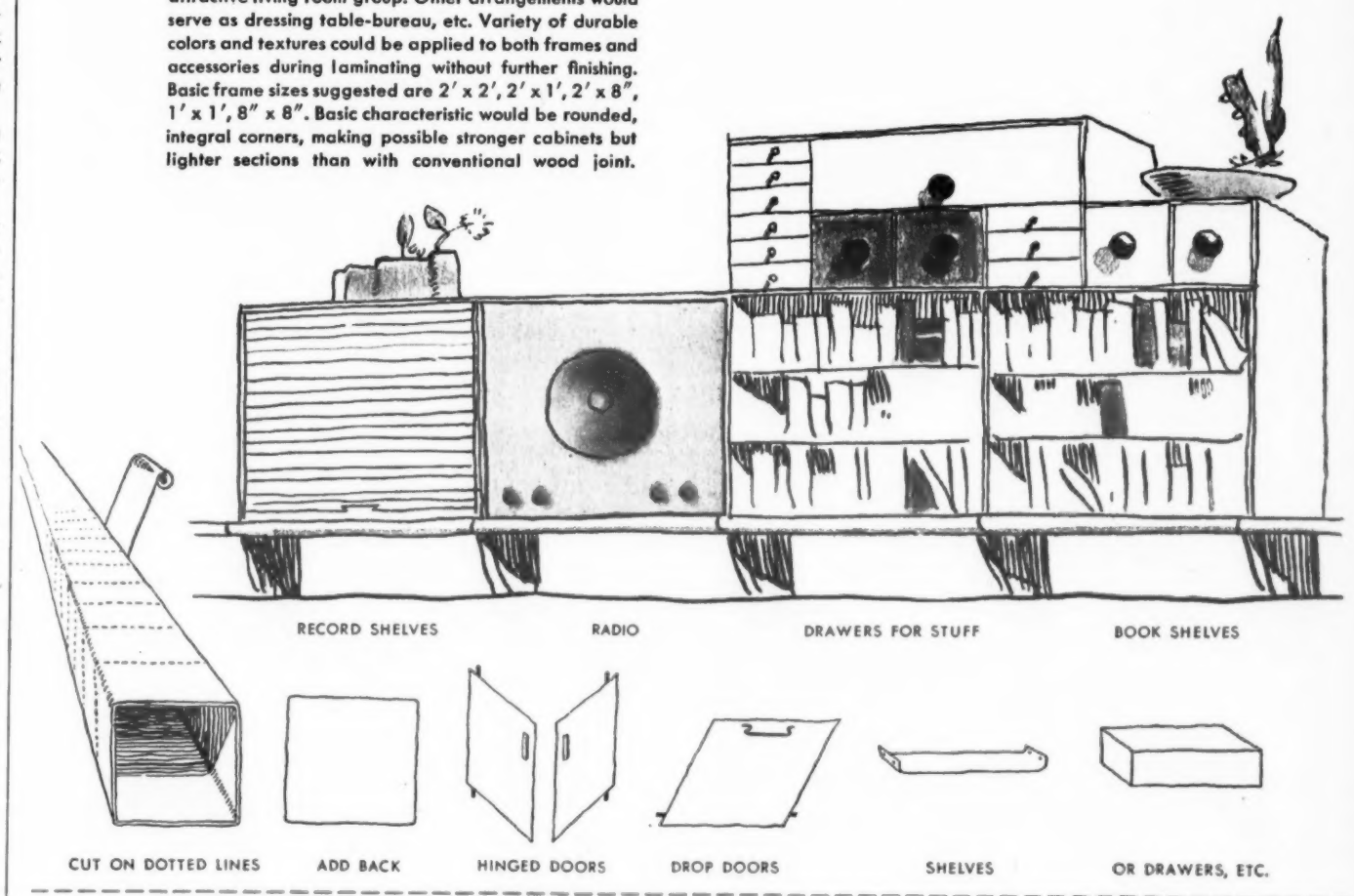
FROM AIRCRAFT AMMUNITION BOXES... EXPENDABLE UTILITY CASES FOR 194X?

ARCHITECT George Nelson has long felt a need for standard furniture units lower in cost . . . lighter in weight . . . and of wider utility than cases, cabinets and chests now on the market. But not until he heard the story of the plastics boxes used to store and feed ammunition to the wing guns of modern fighter planes, did a solution suggest itself.

These boxes once were steel. Now they are fabricated with substantial savings in cost and weight from a thin but surprisingly tough, strong and rigid plastics-and-fabric laminate.

Basing his plans on use of a similar material, laminated on a mandrel into continuous, hollow lengths, Mr. Nelson has developed the interesting suggestions below for producing a wide variety of space-saving units . . . suitable for a wide variety of storage functions . . . from just five basic frames. Such units, he points out, would provide maximum storage in minimum space. Equally important, they should be so inexpensive that they could be discarded without a twinge of the owner's conscience, when they have served their purpose.

Stacked on a standard low bench, units make useful, attractive living room group. Other arrangements would serve as dressing table-bureau, etc. Variety of durable colors and textures could be applied to both frames and accessories during laminating without further finishing. Basic frame sizes suggested are 2′ x 2′, 2′ x 1′, 2′ x 8″, 1′ x 1′, 8″ x 8″. Basic characteristic would be rounded, integral corners, making possible stronger cabinets but lighter sections than with conventional wood joint.



The Broad and Versatile Family of Monsanto Plastics

(Trade names designate Monsanto's exclusive formulations of these basic plastic materials)

LUSTRON (polystyrene) • SAFLEX (vinyl acetal) • NITRON (cellulose nitrate) • FIBESTOS (cellulose acetate) • OPALON (cast phenolic resin) RESINOX (phenolic compounds)

Sheets • Rods • Tubes • Molding Compounds • Castings • Vuepak Rigid Transparent Packaging Materials

MONSANTO PLASTICS
SERVING INDUSTRY...WHICH SERVES MANKIND

PLASTICS AND YOUR FUTURE

Whatever your particular postwar products, chances are excellent that wartime advances in plastics materials and fabricating techniques will open up many exciting new possibilities for smarter styling . . . improved performance . . . lower costs. Chances are also excellent that you will find the answer to your particular needs in a Monsanto plastic. Monsanto is one of the nation's largest producers of plastics. The family of Monsanto plastics is probably the broadest and most versatile offered by any one manufacturer. For facts — and many a pertinent idea — see the 24-page guide to Monsanto Plastics prepared for product designers. Simply write: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield, Massachusetts.

Text of OPA Order RO 9A Rationing Sales of Gas & Coal Stoves (Cont.)

Editors Note: The following is the second and final instalment of the text of the Office of Price Administration Order RO 9A rationing the sales of gas and coal stoves. First part of the text was published in the Aug. 30 issue of AIR CONDITIONING & REFRIGERATION NEWS.

Article IV—Manufacturers

Sec. 4.1 **Explanation of the terms manufacturing establishment and manufacturer.** (a) Any place where a "person" makes or assembles any "stoves covered by this order" for sale or "transfer" is a "manufacturing establishment." Any person who has a manufacturing establishment is called a "manufacturer."

Sec. 4.2 **Manufacturers must file reports—(a) General.** Every manufacturer must file a separate monthly report for each of his manufacturing establishments, on a form to be designated jointly by the Office of Price Administration and the War Production Board. The form must be filled out and submitted in the manner designated on it.

Sec. 4.3 **Manufacturer must send in certificates with his monthly report.** (a) A manufacturer is required to send with his monthly report certificates equal in number and types to those he received for stoves he transferred for certificates during the month covered by the report. However, he may use certificates received in any month to get back stoves that he transferred if they are returned to him, or to acquire stoves from another person who holds them for transfer.

A manufacturer should not give up at the time he files his report, certificates he received for which he made no transfers.

Sec. 4.4 **Manufacturers must keep records.** (a) Every manufacturer must keep a record, by types of stoves, showing production, acquisition, and sales. He must also keep a record of acquisitions and transfers for which he was not required to surrender or obtain certificates.

Article V—Issuance and Use of Certificates

Sec. 5.1 **How certificates are issued—(a) By whom issued.** "Certificates" are issued on OPA Form R-901 by the "Washington Office," a "district office," a "board," or any other "person" authorized by the Office of Price Administration to issue them. Certificates may be issued only to the persons and for the purposes permitted by this order.

(b) **Number and types of stoves must be designated on certificate.** The certificate must show on its face the number of "stoves" and "type" which may be "acquired" with it, the name of the person for whom it is issued, and must be signed by the appropriate official of the Office of Price Administration. (Where a certificate is issued for a combination stove, it must so state.) In addition, if the certificate is issued to a "consumer," it must show the place where the stove is to be used and, if for a gas heating stove, the heating capacity of the stove.

(c) A certificate which is not filled out in the way required by this section is not good for the acquisition of any stove covered by this order and may not be used or accepted for that purpose.

Sec. 5.2 **Certificates are the property of the Office of Price Administration and may be revoked.** (a) All certificates are the property of the Office of Price Administration, whether or not they have been issued.

(b) The Office of Price Administration may suspend, cancel, or revoke any certificate issued if it finds it in the public interest to do so.

Sec. 5.3 **Endorsement of Certificates.** (a) A certificate cannot be used until it is signed on the back by the person in whose name it is issued, or by a person authorized to sign for him.

(b) Any "dealer," "distributor," or "manufacturer" must sign his name on the back of a certificate before it can be used by him to acquire stoves.

Sec. 5.4 **Combining and splitting up certificates.** (a) A board may issue one certificate for two or more certificates, or it may issue two or more certificates for a certificate. The certicates issued must be for the same number and type of stoves designated on the certificates surrendered to the board for exchange. The board shall issue the new certificate in the manner required by section 5.1, and it shall retain in its files the certificates surrendered.

Sec. 5.5 **How to replace lost, stolen, destroyed, damaged or multilated certificates.** (a) Any person who has lost a certificate, or whose certificate was stolen or destroyed, or who has a certificate that is damaged or multilated so that it is unfit for use, may apply to the board serving the area where his establishment is located (or, if he has no establishment, where he lives) for its replacement. The application must be in writing and must state:

(1) The applicant's name and address;

(2) A description (to the extent possible) of each certificate sought to be replaced, showing the date of its issuance, the person by whom it was issued, the number and types of stoves designated on its face, and the name of the person to whom it was issued and the place where the stove was to be used;

(3) How the certificate was lost, stolen, destroyed, damaged, or multilated; and,

(4) The efforts made to find or recover the certificate sought to be replaced, if it has been lost or stolen.

In case of an application for replacement of a damaged or multilated certificate, the certificate sought to be replaced must be submitted at the time the application is made.

(b) The board, if it finds that the certificate for which replacement is sought, has been lost, stolen, or destroyed, or that it is damaged or multilated so that it is unfit for use, may, in its discretion, issue a certificate on OPA Form R-901 to the applicant for the same number and type of stoves.

(c) Whenever a lost, stolen, or destroyed certificate which has been replaced under this section is found or recovered, it must be immediately submitted to a board, and it may not be used for any purpose.

Sec. 5.6 **Names of persons who have been granted certificates may be posted.** (a) A board may post at its office the name and address of any consumer to whom it has issued a certificate under this order.

Article VI—Sales and Transfers of Stoves

Sec. 6.1 **Only dealers, distributors, and manufacturers may transfer stoves.** (a) Except in certain special cases provided in this order, only "dealers," "distributors," and "manufacturers" may sell or otherwise "transfer" stoves covered by this order."†

Sec. 6.2 **Stoves may be transferred only for certificates.** (a) Stoves covered by this order may be transferred and "acquired" only if the transferee gives up to the seller or transferor "certificates" for the number and "type" of stoves transferred. The certificates must be surrendered at the time stated in the next section. They must be endorsed on the back by the "person" to whom issued and by each person who later uses them to acquire stoves, or by someone authorized to sign for him. (A combination stove may be transferred and acquired if the certificate surrendered is for a combination stove.)

(1) In any case in which the War Production Board limits the installation of a gas heating stove to replace another gas heating stove, only a gas stove having a heating capacity equal to or less than the heating capacity stated on the certificate may be transferred to a "consumer."

Sec. 6.3 **When certificates must be surrendered—(a) Consumer contracts; trade contracts made on or after Sept. 1, 1943.** Beginning Aug. 24, 1943, a consumer, and beginning Sept. 1, 1943, a dealer, distributor, or manufacturer, must give up a certificate to the transferor of a stove at the time the offer is made or the order is placed for that stove, and the transferor may not accept the offer or order unless it is accompanied by a certificate.

†For convenience, the dealer, distributor, or manufacturer who makes the transfer is sometimes called "the transferor," and the person who acquires the stove is sometimes referred to as "the transferee."

The setting aside or ear-marking of a stove, directly or indirectly, is an acceptance of an offer or order within the meaning of this paragraph.

Note: A consumer may sell or transfer a stove to another consumer, in which case he must turn over the certificate he obtains to the issuing "board" within ten (10) days after the transfer has been made.

(b) **Trade contracts made before Sept. 1, 1943.** (1) Beginning Sept. 16, 1943, no dealer, distributor, or manufacturer may acquire a stove covered by this order, and no person may transfer a stove to him, under a contract, agreement or other arrangement entered into between them before Sept. 1, 1943, unless a certificate was given up by the transferee to the transferor before Sept. 16, 1943.

(2) If a dealer acquires a stove before Sept. 16, 1943, under a contract, agreement or other arrangement entered into before Sept. 1, 1943, he need not give up, and the transferor need not obtain, the certificate for that stove until Sept. 30, 1943. If a distributor or manufacturer acquires a stove before Sept. 16, 1943, under a contract, agreement or other arrangement entered into before Sept. 1, 1943, he need not give up and the transferor need not obtain, the certificate for that stove until Oct. 7, 1943.

(c) **Transfers between establishments.** If a stove is transferred between establishments operated by the same person, the certificate must be surrendered at or before the time the transfer is made.

Sec. 6.4 **Dealers, distributors and manufacturers must acknowledge orders; if unable to deliver must return certificates.** (a) Beginning Sept. 1, 1943, every offer made or order given by a dealer, distributor, or manufacturer to buy or otherwise acquire stoves covered by this order must be acknowledged in writing by the person to whom it is made within three days of the date it is received. The acknowledgment must also state the date delivery is expected to be made .

(b) If the offer or order to acquire stoves contains a requested delivery date which the transferor cannot meet, he must return the certificates, or, when requested, send them to any person designated by the person making the offer. If no delivery date is specified the transferor may hold the certificate for a reasonable time and, if the order is not filled, must then send the certificate back unless otherwise directed by the person making the offer.

Sec. 6.5 **Dealers, distributors and manufacturers may not discriminate in sale of stoves.** (a) No dealer, distributor, or manufacturer may discriminate in the transfer of stoves covered by this order among consumers, dealers, or distributors entitled to acquire stoves in exchange for certificates.

Sec. 6.6 **Transfers to or for exempt agency, export or project authorized by government agency are not restricted.** (a) Nothing in this article is intended to limit or restrict transfers to or for exempt agencies or to or for persons acquiring stoves for export or for installation in a project authorized by the War Production Board, or the replenishment of stoves transferred to or for such persons by dealers or distributors.

Article VII—Permitted Transfers Without Certificates

Sec. 7.1 **Stoves in transit to dealers, distributors and manufacturers on Aug. 31, 1943, or to consumers on Aug. 23, 1943.** (a) No "certificate" need be surrendered for a delivery of a "stove covered by this order" to, or an "acquisition" of a stove by, a "dealer," "distributor," or "manufacturer" if that stove was in transit to him on Aug. 31, 1943. No certificate need be surrendered for a delivery of a stove to, or an acquisition of a stove by, a "consumer" if that stove was in transit to him on Aug. 23, 1943.

Sec. 7.2 **Stoves may be moved to establishment in whose inventory they are included.** (a) No certificate need be surrendered for a "transfer" of stoves to the establishment in the inventory of which they were included immediately before the transfer.

Sec. 7.3 **Stoves may be stored and returned.** (a) No certificate need be surrendered for a transfer of stoves for storage purposes only, or for the transfer of such stoves back to the "person" who stored them.

Sec. 7.4 **Stolen or lost stoves may be returned.** (a) No certificate need be surrendered for a return of stolen or lost stoves to the person from whom they were stolen or who lost them.

Sec. 7.5 **Stoves may be exchanged for other stoves.** (a) Any person may exchange a stove for another stove of the same "type" with any person, without surrendering a certificate. (This rule applies, of course, only to exchanges of "new" stoves; it applies even if there is a money payment to make up any difference in the money value of the stoves exchanged.) Although a consumer may exchange a gas heating stove for any other gas heating stove, he may not exchange it for one of greater heating capacity than that for which he is eligible in any case where the use of such stove (or the delivery of gas for it) is limited by the War Production Board.

Sec. 7.6 **Security interests in stoves may be created and released.** (a) No certificate need be surrendered for a transfer of stoves, or of any interest in them, for security purposes only. (For example, if stoves are pledged or mortgaged, the person with whom they are pledged or mortgaged need not give up certificates.)

(b) No certificate need be surrendered for a release of a security interest in those stoves, or for a return of those stoves to the person who originally transferred them for security purposes. (For example, a person who pledged stoves may get them back without giving up certificates.)

Sec. 7.7 **Stoves may be transferred for liquidation, by operation of law, or in judicial proceedings—(a) General.** No certificate need be surrendered by a person who acquires stoves for liquidation only. Also, no certificate need be surrendered for a transfer of such stoves by operation of law. (For example, stoves may be taken over by a creditor, receiver or trustee, under a court order without giving up certificates. If such stoves are assigned for the benefit of creditors, the person to whom they are assigned need not give up certificates to the person making the assignment. Also, a person need not give up certificates when he inherits stoves or acquires they by will.)

(b) **How transferee may dispose of stoves.** A person who acquires stoves in the way described in the last paragraph, must, within five (5) days after acquiring them, report to the "district office" serving the place where his principal business office is located (or to the district office serving the area where he lives, if he has no business office):

(1) The quantity of each type of stove acquired;

(2) The name and address of the person from whom they were acquired; and,

(3) The way in which and the date when they were acquired.

He may not use any of the stoves which he acquires unless he surrenders to the district office certificates for the types of stoves to be used. He may, however, sell or transfer them in the same way that a dealer or distributor is permitted to sell or transfer stoves, in which case he must within thirty (30) days surrender to the district office the certificates obtained for the stoves sold or transferred. However, if a person acquires stoves in connection with the acquisition by operation of law of a going business which is to be continued, the provisions of section 9.5 shall apply instead of the provisions of this paragraph.

(c) **Consumer inheritance.** A consumer who acquires a stove covered by this order from another consumer by inheritance or will, may use it without surrendering a certificate.

Sec. 7.8 **Stoves may be acquired by insurers or for salvage—(a) Acquisition of damaged stoves.** Stoves which have been damaged may be transferred to, and acquired by, the following persons, without the surrender of certificates:

(1) A person who has paid or is liable for a claim for the damage done to the stoves, and who is entitled to reimburse himself by taking them over; or,

(2) A person principally engaged in the business of adjusting losses or of reconditioning or selling damaged articles.

(b) **Disposal of the stoves.** The person acquiring the stoves must, within five (5) days after acquiring them, report to the district office serving the area where his principal business office is located (or to the district office serving the area where he lives, if he has no business office):

(Concluded on Page 17, Column 1)

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OPA Stove Order Sets Up Rules For Transferring These Appliances

(Concluded from Page 16, Column 5)

(1) The quantity of each type of stove acquired;

(2) The name and address of the person from whom they were acquired; and,

(3) The way in which and the date when they were acquired.

If he cannot ascertain the quantity and types of stoves within that period he must describe the approximate number of stoves, by types, and must give detailed information as soon as he can. He may dispose of the stoves which are capable of use as stoves after being repaired only by a sale or a transfer in the same way that a dealer or distributor is permitted to sell or transfer stoves, in which case he must within thirty (30) days surrender to the district office the certificates obtained for the stoves sold or transferred. If he cannot dispose of them all, he must report to the district office the quantity (by type) not salable.

Sec. 7.9 **Transfer of damaged stoves without certificates.** (a) Any person who has stoves which are damaged and cannot be sold in exchange for certificates may apply to the board serving the area where his establishment is located (or, if he has no establishment, where his principal business office is located) for permission to dispose of such stoves without obtaining certificates. The application must be in writing and must state:

(1) The applicant's name and address;

(2) The number and type of stoves damaged;

(3) The reason the stoves are in damaged condition, and the nature of the damage; and,

(4) The reasons why the stoves cannot be sold in exchange for certificates.

(b) If the board finds that the stoves have been damaged by accidental means and cannot be sold in exchange for certificates it may grant permission, in writing, to the applicant to dispose of the stoves described in the application without the obtaining of certificates. The board shall send to the district office for its files, a copy of the written permission granted.

Sec. 7.10 **Stoves may be transferred in connection with transfer of a business.** (a) No certificates need be surrendered for a sale or transfer of stoves which are in the inventory of an establishment, as part of a sale or other transfer of the establishment itself for continued operation. A person who buys or acquires such stoves may not use them, but may hold them only for transfer. (The procedure which must be followed, when an establishment is transferred for continued operation, is covered in Article IX.)

(b) No certificate need be surrendered for the transfer of a stove in connection with a transfer of premises on which the stove is located.

Article VIII—Records, Reports and Inspections

Sec. 8.1 **Records must be kept for two years.** (a) Every "person" must hold, for at least two years, all records which this order requires him to keep.

Sec. 8.2 **Records may be inspected by Office of Price Administration.** (a) All records kept under this order may be inspected by the Office of Price Administration, through any authorized representative. The inspection may be made at a person's place of business during regular business hours. In the case of records kept on forms prepared by the Office of Price Administration, the inspection of those records may be made at any time or place fixed by the Office of Price Administration. Every person required to keep records under this order must keep them available for such inspection.

Sec. 8.3 **Places where stoves are kept may be inspected.** (a) The Office of Price Administration, through any authorized representative, may at any reasonable time inspect any place where a "dealer," "distributor," or "manufacturer" makes or keeps "stoves covered by this order."

Sec. 8.4 **Records and reports are confidential.** (a) Information and documents obtained from any person under this order will not be disclosed, whether in response to a subpoena or in any other way, except to that person, unless the Administrator (or a representative of the Office of Price Administration designated by him) finds that the requested disclosure is not contrary to law and consents to it.

Sec. 8.5 **Office of Price Administration may require applicants to give information.** (a) The "Washington Office," a "board," a "district office" or a regional administrator may require any person who files an application or an appeal under this order to appear in person, to bring witnesses and to supply any information needed for deciding his case.

Article IX—Sale of Business and Opening or Closing of Business

Sec. 9.1 **Transfer of a continuing business.** (a) When any "person" sells or "transfers" to any other person his "dealer establishment" or "distributor establishment" for continued operation by the person who "acquires" it, the person transferring the business shall give to the person acquiring it his registration form and all "certificates" that he has at the time the business is sold. (The certificates must be signed by the person transferring the business).

(b) Within five (5) days afer the transfer, the person acquiring the business must file an application on OPA Form R-902 for registration as a "dealer" or "distributor." At the time of the filing, he must, if his "registered inventory" equals the "allowable inventory" for each type of stove of the business being acquired, endorse the registration form of the person transferring the business and surrender it to the board. However, if the registered inventory does not equal the allowable inventory for each type of stove, the person acquiring the business should not endorse the registration form, but should report the discrepancy to the board in writing. (Section 3.5 explains how registered inventory is figured.)

Sec. 9.2 **Movement of an establishment from one place to another place by the same person.** (a) A person who wishes to move his dealer or distributor establishment to another place must treat his moving as the closing of an establishment and the opening of a new establishment unless he applies for and is granted permission to continue his operations at the new place. The application must be made to the board with which his establishment is registered and must, in addition to showing the new address, state, in writing. whether:

(1) The business, including the inventory of stoves, will be moved to the new place;

(2) He will continue to serve, from the new place, the same general class of customers and the same area served by the establishment at its present place; and,

(3) The business will continue to be operated in substantially the same manner as it is operated at the present place.

(b) The application will be sent by the board to the "district office," together with any recommendation the board may wish to make. If the district office is satisfied that the conditions described in paragraph (a) will be met, it shall grant permission to the applicant to continue operations at the new place of business.

Sec. 9.3 **New Business.** (a) A person who opens a dealer or distributor establishment after July 1, 1943, must file an application on OPA Form R-902 for registration as a dealer or distributor with the board serving the area where the establishment is or will be located in the same way that dealers and distributors register under Article III. He must give all information called for by the form. In addition, the applicant must show, in writing:

(1) The proposed name and address of the establishment; and,

(2) The type and size of business he expects to have.

(b) The board must send a copy of the application, together with the applicant's statement and any other information it has received, to the district office. It may attach its recommendation as to the action that should be taken upon the application and the amount, if any, of allowable inventory that should be authorized. The district office shall send the file to the "Washington Office" which will refer it to the War Production Board. If the War Production Board approves the application, the Washington Office (or the district office, if the Washington Office so directs) will determine the allowable form as approved by the board will then be mailed to the applicant.

Sec. 9.4 **Closing of business.** (a) Any dealer or distributor who closes an establishment must notify the board with which the establishment is registered. The notice must be in writing and must be given to the board within five (5) days after the business is closed. It must show: (1) The name and address of the establishment; and,

(2) The number of stoves, by type, represented by certificates he had at that time.

(b) At the time the notice is given he must deliver to the board his registration form and account to it for the number of stoves of each type which his allowable inventory permits him to have. If he has any certificates he must turn them over to the board; if he has stoves of any type covered by this order which have not been disposed of at the time he files his notice, he must account for them by turning over to the board certificates which he obtains when they are transferred.

Sec. 9.5 **Acquisition of a business by will or by operation of law.** (a) Any person who acquires a dealer or distributor establishment by operation of law must within twenty (20) days of its acquisition register the establishment. Registration shall be made in the manner required by Article III, except that only the actual inventory shall be taken as of the date of registration (since certificates are not transferred by operation of law). Accordingly, the board shall issue certificates to him in the amount, if any, by which the allowable inventory of his predecessor for any type of stove exceeds the actual inventory for that type.

(b) A dealer or distributor (or his representative) whose establishment is transferred by operation of law, must turn over to the board with which the establishment is registered the registration form and certificates received for stoves which have been transferred. He must also account to the board for certificates which he has accepted for stoves not yet transferred.

Article X—Miscellaneous Rules and Prohibitions

Sec. 10.1 **Additional prohibitions.** (a) No "person" may use a "certificate" unless he has received it in a way permitted by this order.

(b) No person may "transfer," "acquire," use or possess "stoves covered by this order," except in a way permitted by this order or by an applicable order of an agency of the United States.

(c) No person may give or otherwise transfer, or obtain or otherwise acquire, or use a certificate except in a way permitted by this order.

(d) No person may transfer any stove for a certificate, if he knows or has reason to believe that it is not valid or that the person tendering it is not entitled to use it.

(e) No person may have a certificate in his possession except the person (or agent of the person) who issues it, or to whom it was issued, or by whom it was acquired in a way permitted by this order.

(f) No person may counterfeit, forge, deface, or mutilate any certificate. A counterfeited, forged, defaced or mutilated certificate is not valid for transfer, and no person may acquire, possess or use such certificate.

(g) No person may alter or destroy any certificate, nor use any altered certificate, except where permitted by this or any other order of the Office of Price Administration.

(h) No person may transfer a stove in violation of any applicable order of an agency of the United States.

(i) No person may offer, solicit, attempt or agree to do, or assist in doing, any act in violation of this order.

(j) Paragraphs (b), (c), (e), (f), (g), and (h) of this section do not apply to public officials who do any of those acts in the performance of public duties, or to persons complying with orders or directions of such officials.

(k) No person may in any registration, report, application, or other statement or record made pursuant to or required by this order, make any untrue statement of fact, or omit to state any fact which is required to be stated or which is necessary to make a statement not misleading.

(l) No person may, after demand, withhold a certificate from a person who is entitled to have it.

Sec. 10.2 **Certificates may not be taken by legal process or acquired by will.** (a) No certificate, or any interest in it, may be taken or seized by judicial process or any court order. However, a person who is entitled to possession of a certificate may bring a legal proceeding to recover it from any person who is wrongfully in possession of it. He may, as part of that proceeding, take or seize it by judicial process or court order.

(b) No certificate, or interest in it, may be transferred or acquired by operation of law.

Sec. 10.3 **Office of Price Administration must be notified of legal proceedings.** (a) Any person who has a certificate must notify the "district office" of the Office of Price Administration immediately after the beginning of legal proceeding involving that certificate.

Article XI—Suspension Orders

Sec. 11.1 **Office of Price Administration may issue suspension orders.** (a) Any "person" who violates this order may, by administrative suspension order, be prohibited from receiving, delivering, selling or using any "stoves covered by this order" or other rationed product or facility for such period as in the judgment of the Administrator, or such person as he may designate for such purpose, is necessary or appropriate in the public interest. Proceedings for suspension orders shall be begun and carried on as provided in Procedural Regulation No. 4.

Article XII—Appeals

Sec. 12.1 **Persons directly affected by action taken under this order may appeal.** (a) Any "person" directly affected by the action of a "board," "district office," or regional administrator, on any application or other matter may appeal from that action in the way permitted by Procedural Regulation No. 9 of the Office of Price Administration.

(b) This section shall not apply to action taken on any application made under section 3.8 or 9.3.

Effective date. This ration order shall become effective at 12:01 a.m. on Aug. 24, 1943.

Note.—All reporting and record-keeping requirements of this regulation have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Issued this 19th day of August 1943.

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Stick to A.S.A. Safety Code In Changing Refrigerants, N.Y. Firm Advises

'Sensible Use of Refrigerants Under the Emergency Now Confronting the Industry'

Editor's Note: Buensod-Stacey, Inc. of New York City is one of the nation's leading air conditioning firms, and its top men, Messrs. Buensod and Waterfill, are vitally interested in the industry's current problem—substituting other refrigerants for "Freon." They have written this article to encourage, as they put it, the "sensible use of refrigerants under the emergency now confronting the industry."

By A. C. Buensod, President, and R. W. Waterfill, Vice President, Buensod-Stacey, Inc.

Refrigeration and air conditioning made rapid progress in the 15 years preceding the outbreak of the present war. This progress was facilitated by many things, including public appreciation, industrial necessity, as well as research, new refrigerants, standardization, and the adoption and adherence to codes and ethical standards by the better organizations in the industry. While it is impossible to avoid mistakes, disappointments, and chiseling by both producer and purchaser, the industry generally realizes its responsibility to the public.

The general public is in no position to qualify as experts on every commodity and service it enjoys in modern life. To maintain the high standard of American living it is therefore essential that the public have confidence in the established producers of these commodities. The refrigeration and air conditioning industry has realized this ever since it started producing commodities and services directly affecting the public, and has evolved codes and standards to protect the public and insure its merit of such confidence. This responsibility also extends to the formulation of codes to inform and guide civil authorities, builders, owners, etc.

The evolution of codes has been a long and difficult procedure and one that promises to continue for some time. The reasons for this are chiefly that the code must follow the development of the art itself and the many uses served.

One of the principal codes of the refrigeration industry is a Safety Code designed to protect, as far as possible, public health and property. While the benefits of refrigeration and air conditioning are varied and enormous—their value today is only partially realized—it is felt that this is no excuse for comprising with safety.

Appreciating its stake in a safe and sane development of the refrigerating industry, the American Society of Refrigerating Engineers sponsored a model Safety Code for Mechanical Refrigeration, under the rules and regulations of the American Standards Association, with the hope that it would serve as an American standard. In order to insure fulfillment of the broad purposes of the code, many groups, including especially those concerned with the public interest, such as Underwriters' Laboratories, Inc., National Safety Council, etc., participated.

The current code approved by the ASA in 1939 represents many years' work by experts in each phase of the problem, and thus stands as a certified model for incorporation in local regulating ordinances.

While it is admitted that no code will ever be perfect, the 1939 ASA Code is pretty rigid in its public safeguards, and the code is abreast of the current state of the refrigeration art in all basic essentials. This is particularly true in its classification of refrigerants into groups according to the relative safety with which they may be employed. While new refrigerants may be added to these groups as developed and classified, it is to be hoped that the safety standards already achieved will be maintained.

The ASA group classifications based on extensive tests of toxicity and flammability are as follows:

GROUP 1

Carbon dioxide	CO_2
Dichlorodifluoromethane (Freon-12)	CCl_2F_2
Dichloromonofluoromethane (Freon-21)	$CHCl_2F$
Dichlorotetrafluoroethane (Freon-114)	$C_2Cl_2F_4$
Dichloromethane (Carren No. 1)	CH_2Cl_2
Trichloromonofluoromethane (Freon-11) (Carrene No. 2)	CCl_3F

GROUP 2

Ammonia	NH_3
Dichloroethylene	$C_2H_2Cl_2$
Ethyl chloride	C_2H_5Cl
Methyl chloride	CH_3Cl
Methyl formate	$MCOOCH_3$
Sulphur dioxide	SO_2

GROUP 3

Butane	C_4H_{10}
Ethane	C_2H_6
Isobutane	$(CH_3)_3CH$
Propane	C_3H_3

The present curtailment in the use of chlorinated hydrocarbon ("Freon") refrigerants, as dictated under war activities and as shown in the Conservation Order M-28 of the War Production Board, brings to the forefront the question of substitution of refrigerants where possible in order to alleviate the serious shortage, particularly of "Freon-12."

It has already been demonstrated that through ignorance and through the pressure brought to bear by owners who have no conception of the hazards involved in substitutions some deaths have been attributed to the substitution of other refrigerants than the "Freon-12" for which systems have been designed. With this in mind it is well to enumerate the fundamental safety precautions as set forth in the A.S.A. Code, which is as follows:

Sec. 7—PUBLIC ASSEMBLY OCCUPANCIES

7.20 The maximum quantity of a group 1 refrigerant in a Direct System used for air conditioning for human comfort shall be limited by the volume of the space to be air conditioned as shown in the table at the top of the next column. (F-12, 30 lbs. per 1,000 cf.)

7.31 **Group 2 refrigerants shall not be used in a system for air conditioning for human comfort, except in an indirect Vented Closed Surface System, or in a Double Indirect Vented Open Spray System, or in an Indirect Absorptive Brine System.**

Sec. 9—COMMERCIAL OCCUPANCIES

9.12 Refrigerant piping shall not be carried through floors except as follows:

c. In systems containing Group 1 refrigerants and used for air conditioning for human comfort, the refrigerant piping may be carried through floors provided it is enclosed in an approved, rigid, and tight continuous fire-resisting flue or shaft where it passes through any intermediate space not served by the air ocnditioning system. The flue shall be vented to the outside or to a space served by the air conditioning system. Such systems shall conform to the requirements of paragraph 9.20.

9.20 Direct Systems containing more than 20 pounds of a Group 1 refrigerant when used for air conditioning for human comfort, shall be limited by the volume of the space to be air conditioned as follows:

F-12, 30 lbs. per 1,000 cf.

9.22 A system containing more than 1,000 pounds of a Group 1 refrigerant shall be of the Indirect type with all the refrigerant containing parts, excepting parts mounted outside the building, installed in a machinery room used for no other purpose and in which for Group 1 refrigerants, excepting carbon dioxide, no flame is present or apparatus to produce a flame is installed.

9.30 **A system containing more than 20 pounds of a group 2 refrigerant shall not be used for air conditioning for human comfort unless it is of the Indirect Vented Closed Surface, Double Indirect Vented Open Spray,** Indirect Absorptive Brine, or primary circuit of a Double Refrigerant type with all the refrigerant containing parts, excepting parts mounted outside the building, installed in a machinery room used for no other purpose.

9.31 More than 600 pounds of a group 2 refrigerant shall have all refrigerant containing parts installed in a Class T machinery room.

Sec. 10—INDUSTRIAL OCCUPANCIES

10.10 There shall be no restriction on the quantity or kind of refrigerant used in an Industrial occupancy, except as specified in paragraph 10.20.

10.20 When the number of employes above the first floor exceeds one per 100 square feet of floor area, the requirements of commercial occupancies shall apply unless that portion of the building containing more than one employe per 100 square feet of floor area above the first floor, together with its entrances and exits, be cut off from the rest of the building by vaportight construction with self-closing, tight-fitting doors.

The authors, having both been engaged in the pioneering days of the use of the new refrigerants, and having on many occasions sat in with Municipal authorities such as in New York City, with the idea of assisting in the formulation of Municipal Codes that are practical and which safeguard life and property, we thought it would be of interest to quote the present provisions governing the installation of air conditioning and refrigerating systems in the City of New York. The following provisions from the prevailing Municipal Code are as follows:

C19-98.0 Permissible Locations

(b) **The direct method of refrigeration shall not be used in any building,** whether or not a permit is required for installation wherein, outside of a refrigerating machinery room **except** in buildings used exclusively for ice making or for refrigerating purposes, or **when such method is not carried above the first floor in business buildings,** or **in the business sections of business buildings provided the entire system is confined to one floor in the space occupied by a single tenant,** or **in the business section of a residence building** when not carried above the first floor, or in a residence building occupied by not more than two families, or in any building **provided a non-irritant and non-inflammable refrigerant is used.**

(f) It shall be unlawful to install or maintain a refrigerating system employing an irritant or inflammable refrigerant in or on:

2. Dance halls, court rooms, police stations, jails, subways, theaters, or motion picture theaters.

(h) The use of methyl or ethyl chloride, sulphur dioxide, or a hydro-carbon refrigerant will not be permitted in Class A systems.

C19-96.0 Permits

(c) It shall be unlawful to maintain or operate any refrigerating system employing a refrigerant other than those specified in this article without a permit issued upon such conditions, consistent with the provisions of this article, as are deemed by the fire commissioner necessary in the interest of public safety.

NOTE—The Fire Chief and Commissioner prescribed under date of April 4, 1934 the following:

1. That the refrigerants . . . "F-12" . . . "F-114" and . . . "F-11" are **non-flammable and non-irritant,** unless otherwise hereinafter provided, and shall be regulated in accordance with the provisions of Article 18 of Chapter 19 of the Administrative Code, as such, except, when used in a room or rooms in which there is an open flame or apparatus to produce an open flame, when the provisions of said article covering irritant refrigerants shall apply.

2. That refrigerating systems employing "F-11," "F-12," or "F-114" are restricted to parts of a building so specified in Section C19-98.0 (b) **for refrigerants other than non-irritant and non-flammable.**

3. That refrigerating systems employing "F-11," "F-12," or "F-114," used for air conditioning are restricted to the indirect method except that the direct method may be used in parts of a building so specified in Section C19-98.0 (b) for refrigerants other than non-irritant and non-flammable.

7. That a refrigerating system employing "F-11," "F-12," or "F-114" shall not be installed or maintained in a theater and/or motion picture theater unless the entire system is cofined in a fireproof machinery room, used for no other purpose, and in which no open flame and/or apparatus to produce such open flame shall be employed, except **that Class "C"** systems containing not more than 10 pounds of refrigerant may be installed in a rest room, smoking room, or lounging room provided in such rooms no open flame or apparatus to produce such open flames shall be employed.

C19-97.0 Classifications

(a) The total amount of refrigerant common to a system operating through one or more evaporators, shall be considered the capacity of the system and determine its class.

(b) A Class A system is a system containing 1,000 pounds or over of refrigerant, or capable of 30 tons capacity or over.

(c) A Class B system is a system capable of less than 30 tons capacity, or containing less than 1,000 pounds of refrigerant and more than amounts provided for in a Class C system.

(d) A Class C system is a system containing not more than 20 pounds of refrigerant.

With the present urge of owners to have their refrigerating systems operate especially for comfort cooling even though "Freon-12" is not available under the present WPB restrictions, some suggestions have been made that substitutes be used, and the authors feel that all those that are engaged in the servicing and

(Concluded on Page 19, Column 1)

What DuPont Officials Say on Change-overs

Electrochemicals Dept.
E. I. du Pont de Nemours Co.
Wilmington, Del.

Editor:

Numerous requests for recommendation on changing from "Freon" to methyl chloride have been answered by us as follows:

"We do not recommend the use of any refrigeration in a piece of equipment designed to handle another refrigerant. Although the properties of methyl chloride and 'Freon' are rather similar, certain changes in the equipment particularly in the controls, would be necessary.

"This fact would indicate that the substitution of one refrigerant for another is a matter that should be considered by the maker of the refrigerating equipment because they should know better than anyone else whether or not another refrigerant may be used."

N. C. Cooper

Anything like this IN YOUR PLANT?

This copper tubular part, when cut in two, is used as a control bulb in the manufacture of essential refrigeration equipment.

By making bulbs in pairs, Wolverine now saves time and manpower and also enables the user to eliminate one cutting operation.

The ends of the bulbs are reduced by the Wolverine Patented Tube-spinning Process* and the pig tails of capillary tube are brazed into them.

Required for a definite purpose, this assembly was designed by the user in collaboration with Wolverine tube-fabricating engineers. All specifications are being met and the job is in production.

• Our new address is Detroit 9, Mich.

If this piece reminds you of a similar problem of yours involving tube or tubular parts, call Wolverine Tube Division for consultation and quotation. We have hundreds of standard tools already on hand for making parts and assemblies similar to the part shown here, along with a wealth of experience in handling seamless tube.

Or if you prefer to make the part yourself, call on Wolverine anyway as a source for tube that will be uniformly high in quality and possess the right properties for fabricating. Also consult our engineers regarding types of tools, methods, and techniques. Their talents and services are yours for no cost.

*Send for illustrated Catalog E-2 which describes many interesting applications of this new process.

BUY WAR BONDS

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
WOLVERINE TUBE DIVISION
Seamless Copper — Brass
1413 CENTRAL AVENUE DETROIT, MICHIGAN

New Yorkers Propose Better Distribution Set-up For 'Freon'

(Concluded from Page 18, Column 5)

in the supplying of these substitute refrigerants should carefully understand the hazards involved both in equipment and in the use of such substitute refrigerants for particular locations.

We feel that it would be much better to advise a comfort cooling system owner for a theater or a place of public assemblage that unless he can obtain a safe refrigerant now permitted as called for in the ASA Code and, of course, if permitted under the Municipal Code in effect, that it is the sensible thing to advise him that unless all the precautions in these codes can be adhered to strictly, he would be better off without any refrigerating effect and depend on his ventilation by circulating outdoor air.

It is unquestionably true, we believe, and we have so been advised by attorneys, that if anyone knowingly substitutes a refrigerant with a known hazard and life is imperiled or lost, all those performing the operation are criminally liable.

There is also much to be desired in the present set-up on distribution of the common "Freon" group refrigerants, especially "Freon-12." The restrictions on the production of "Freon" and the Army and Navy uses to which "Freon" has now been applied, coupled with the fact that the obtaining of steel containers for the refrigerant is a very critical item, the thought has occurred that an immense improvement in the distribution of any of the critical refrigerants could be simply arrived at.

EMERGENCY STOCK

Our suggestion is that each "supplier" who serves a definite number of clients in the use of the "Freon" group of refrigerants, be permitted to stock a small quantity of such refrigerants for the emergency uses as may be dictated by the conservation program for the use of such clients.

By having it in stock, this "Freon" can be made available in a few hours or practically overnight to any client requiring in the emergency the use of such refrigerant. This would eliminate the present necessity, in the minds of all users, that they must have on hand their own emergency reserves, tying up cylinders that cannot be utilized and adding up the total of reserves that users have in this manner, can be a tremendous quantity of refrigerant. This has been the method that has prevailed as each and every user is trying selfishly or otherwise to safeguard his own operation.

It would also add very effectively to this plan of distribution if the producer of the "Freon" groups reopened his warehouses in the several parts of the country so that adequate and easy procurement under any licensing provision under the conservation program would be available to any supplier upon telegraphic orders, in order to fulfill the requirements of an owner, say, located in New York, that has to operate a system in California.

Special Filters Keep Silverware Bright

NASHVILLE, Tenn. — Even the usual small amount of sulphur dioxide in the air will cause silverware on display to lose its luster and gradually to tarnish. But chemically treated filters in an air conditioning system will absorb enough of the sulphur dioxide to defeat its action on silver.

The firm of Phillips and Buttorf, at 217 Third Ave. in Nashville, maintain the largest silver, china, and glass gift department in the South. Five years ago they remodeled their store, and used their knowledge of the above two facts to have a specially built air conditioned silver room set up within their gift department.

The display room, 14 x 45 x 10 feet, is glass-enclosed on three sides and set against the wall facing the entrance. The entire department is heavily carpeted and ceilinged with celotex.

1,900 Tons of Refrigeration In 6 Vessels Will Cool Food for Army Now, Bananas After War

CHICKASAW, Ala. — More than 1,900 tons of refrigeration will be supplied to nearly 2,000,000 cu. ft. of cargo space when six of the nation's newest cargo ships are completed at the Gulf Shipbuilding Corp. yards here, according to Llewellyn Williams, vice president in charge of engineering and production for York Corp.

Built to carry refrigerated supplies to U. S. and Allied forces during the war, each of the six new vessels will have three York eight-cylinder "Freon-12" refrigeration machines, six condensers, and three brine coolers.

They will be equipped also with brine and water pumps to make three complete refrigerating units for the main cargo area.

Two four-cylinder compressors, with their condensers and cooling coils, will be used for the ships' stores and special cargo. After the war the vessels will be operated in the banana trade by their owners, United Fruit Co.

By dividing the main cargo refrigeration into three separate and independent systems not inter-connected at any point on the refrigerant side but common on the brine side, engineers have provided for maximum assurance of uninterrupted safe transportation of perishable cargo.

All heavy machinery is placed low in the vessels, with the refrigeration condensing system placed in the main ship propulsion engine room and the brine coolers in the propeller shaft space to provide for maximum stability.

Original plans begun before the start of the war called for the construction of only three vessels, these to be built in England. When war was declared, however, the project was shifted to this country and enlarged to include six ships.

In addition, the area to be refrig-

Refrigeration and Air Conditioning As a War Production Tool

By L. W. Clifford, Sales Development Section Supervisor, Westinghouse Electric & Mfg. Co., East Springfield, Mass.

Aircraft and Civilian Defense Control Centers

In the majority of cases the nerve, or control center, of the many Armed Service and Civilian Defense activities is so located, and the building housing it so constructed, that natural ventilation is not sufficient to maintain adequate living or working conditions.

Ofttimes the control room is underground and even if it above ground it must be capable of being completely "blacked out" in order that, during real or simulated raids, those on duty can carry on their work of collecting and coordinating information, directing the defensive and offensive strategy or supervising the activities of the civilian defense personnel.

Particularly where there is a possibility that the enemy, in attacking, will use poison gas, it is necessary that this control center be equipped with gas protection apparatus.

To all these considerations must be added the fact that, during those periods when raid conditions exist, the control center personnel is working at maximum speed.

In one large eastern city the Aircraft Fighter Command Control Center has been air conditioned and equipped with gas protection apparatus supplied by the government. Two condensing units and auxiliary equipment provides the cooling.

TO ALL "FREON" USERS

RETURN YOUR CYLINDERS AT ONCE!

Huge quantities of "Freon-12" are being used by the government for "Aerosol" bombs—to help control malaria wherever our fighting men may be exposed to that dread disease. And "Freon" is doing other important war jobs.

Despite these tremendous demands, more "Freon" is being shipped for civilian and military refrigeration than ever before.

To maintain this rate of production will require the return of every "Freon" cylinder the moment it becomes empty.

So—return your empty "Freon" cylinders NOW! By doing that you'll protect yourself and help maintain delivery of "Freon" for essential civilian requirements.

DON'T USE THEM FOR OTHER PURPOSES

"Freon" cylinders are loaned to companies and individuals and are not the property of those having possession of them. They should be returned when empty and must not be filled with compressed gases of any other kind. Neither should "Freon" cylinders be used for the servicing of other gases. The cylinders should be returned to Kinetic Chemicals, Inc., Carney's Point, N. J.

NOTE: *WPB is conducting surveys in several cities to determine why "Freon-12" cylinders have not been returned more promptly. Should these surveys show diversion of cylinders to other uses, action will be taken against those responsible.*

KINETIC
REG. U. S. PAT. OFF.

FREON
REG. U. S. PAT. OFF.

safe refrigerants

"Freon" is Kinetic's registered trade mark for its fluorine refrigerants.

BACK THE ATTACK . . . BUY ANOTHER WAR BOND THIS SEPTEMBER

Servicing Sealed Units Of Kelvinator Design

Written in collaboration with the service department, Kelvinator division, Nash-Kelvinator Corp.

1939 Electrical Service

The thermal relay used on 1939 systems became standard equipment during the later 1938 production. Its operation is simple and can be explained briefly.

Referring to Fig. 14, the thermal element carries all current going to the condensing unit motor. When the thermal element is carrying no current (thermostat off), both relay contacts are closed. As soon as the thermostat cuts in, the relay contacts (which are closed) allow the current to flow through the starting and running windings and the unit starts.

The element warms rapidly and lengthens, allowing the spring to pull the arm around. The relay contact then remains on the running position and stays there during normal operation. In this position the starting contact is open and the overload contact is closed.

If for any reason the unit should draw excessive current, elongation of the thermal element continues and the thermal overload contacts open. (When the thermostat cuts out after a normal cycle, the thermal element cools and the switch returns to the starting position after a minute or two). After an overload cut out, the relay is in the open position. After a minute or two of cooling, both movable contacts return to the starting position. The time required for the thermal overload to reset fluctuates with room temperature.

When the thermostat cuts off after a normal cycle or when the switch is turned off, after a normal cycle, the starting contacts remain open for the length of time required for the thermal element to cool. If the switch is closed during the few seconds interval before the starting contacts again close, the unit will fail to start and the overload will operate. This may be mistaken as an indication of unit failure, whereas it is normal operation for this type of relay.

Fig. 15 illustrates the wiring and terminals, or the bottom of the relay. Fig. 16 shows the complete system wiring diagram.

Fig. 14. Construction of Thermal Relay

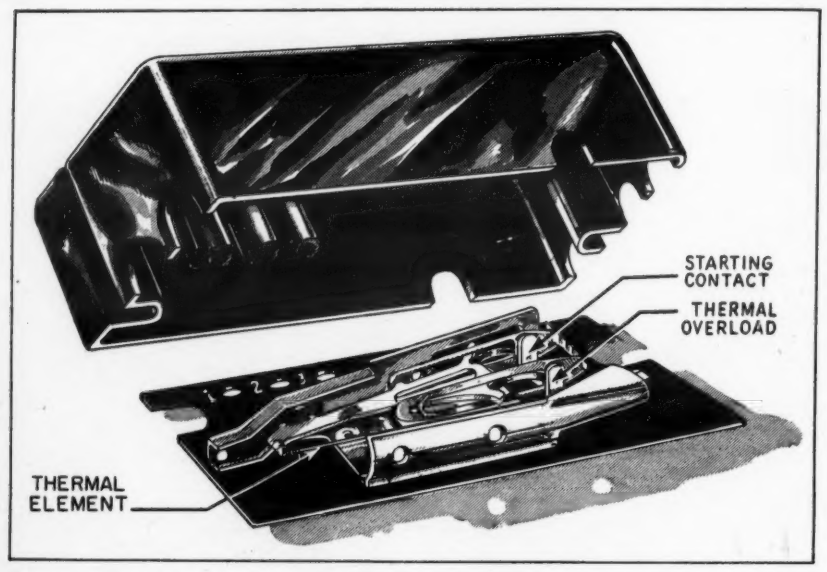


Fig. 14. Details of the construction of the thermal relay used in the 1939 Kelvinator household refrigerator system. Understanding of its operation is important to those who service these systems.

Fig. 16. Wiring Diagram For the 1939 Kelvinator System

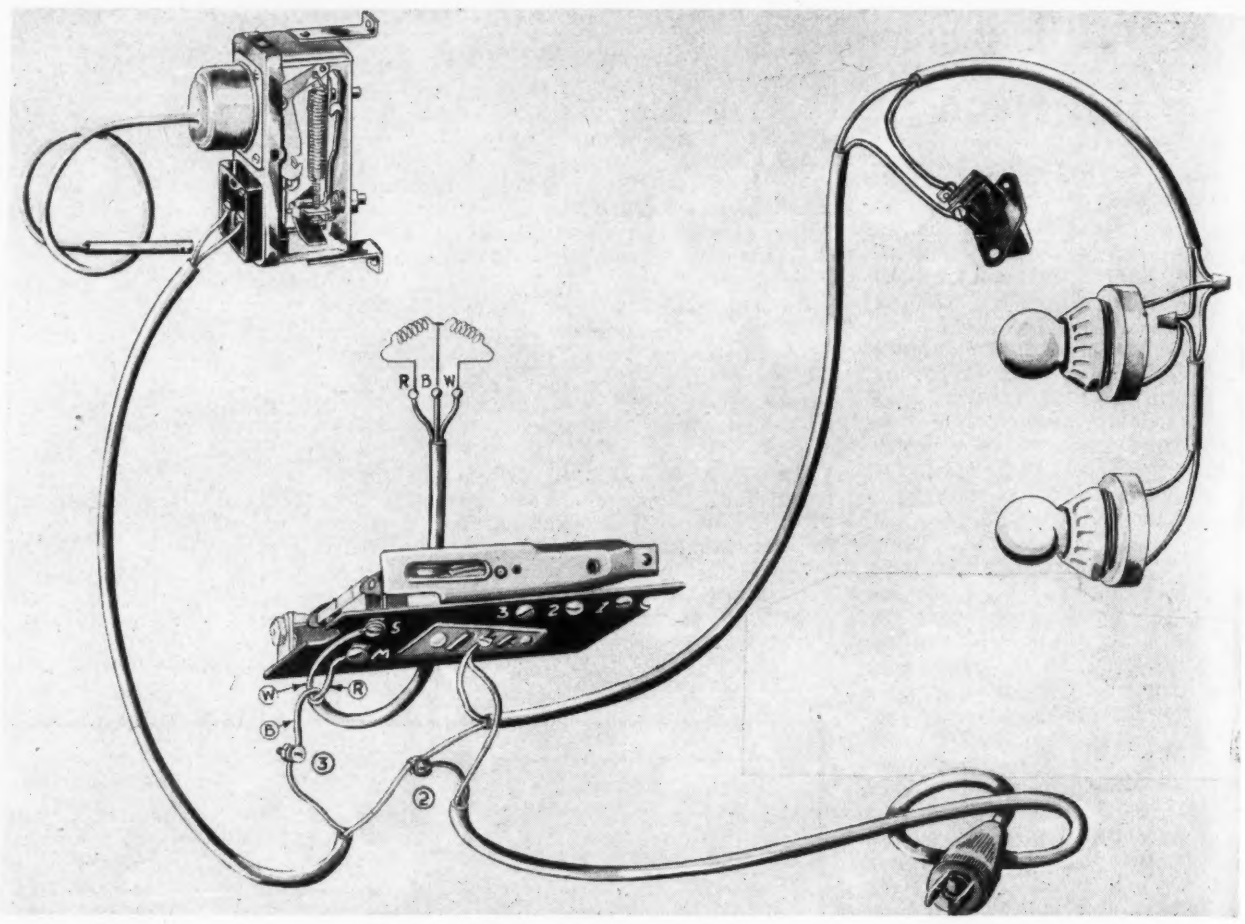


Fig. 16. Complete system wiring diagram for the 1939 Kelvinator household refrigerator system, showing control and light circuits and relay.

Method of Attaching Test Starting Leads

1. Instead of the standard type of push-button starting leads, a calibrated relay is used as illustrated in Fig. 17. As an initial test, it is best to start with the cabinet and system at room temperature. Connect a wattmeter into the motor circuit and use the test starting leads for starting. Start the unit and allow it to run for 10 minutes. If at the end of this period a wattage in excess of 220 is indicated, the motor should be considered inoperative. The following tests should then be applied:

(A) Using the test lamp, plug into an electrical outlet and ground one test point on the compressor housing. Place the other point successively on all three motor terminals. If the lamp lights, a grounded motor winding is indicated.

(B) Using the test lamp, plug into an electrical outlet. Place the test points on R and B, B and W, and R and W. If the lamp does not light in each trial, an open winding is indicated.

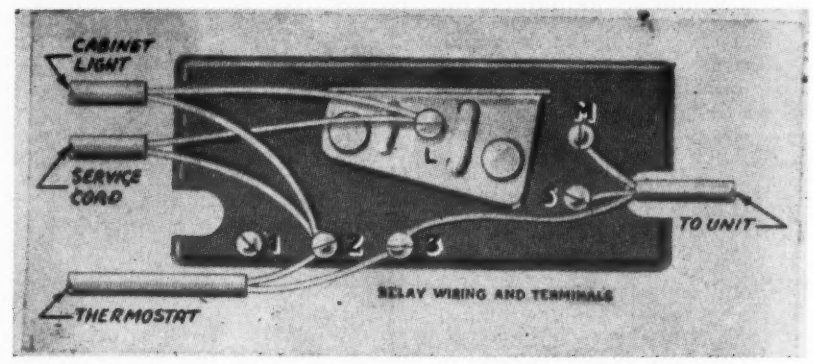


Fig. 15. Wiring of the terminals or the bottom of the relay used in the 1939 Kelvinator system.

2. If the procedure in No. 1 indicates that the compressor motor is all right, the following procedure will locate the compressor trouble.

(A) **Thermal overload open.** Use test lamp with terminals shorted. Plug in the unit service cord and close the temperature control switch. Place the test lamp points on relay terminals L and 2, and then on L and M. If the lamp lights on the first position and not on the second, the thermal overload is open.

(B) **Relay contacts stuck closed.** Use test lamp with terminals shorted. Plug in the service cord, place the test points on terminals S and 3 and close the temperature control switch. If the lamp remains brightly lighted for five seconds, the relay contacts are stuck closed.

(C) **Relay contacts fail to close.** With the relay contacts stuck open, the motor will not start when the procedure in "B" is followed and the lamp will not light.

(D) **Starting relay opening too soon.** Follow the procedure outlined under "B." If the relay contacts are opening too soon, the motor will fail to pick up the load and will stop. (This may be due to improper unloading). The lamp will go out, the current will continue to flow through the thermal element, and the overload will open. After a period of time the thermal element will cool, allowing both contacts to close, and the above operation will begin again. If the unit does not start after five or six operations of the overload, the timing is too short.

(Concluded on Page 21, Column 1)

If you can't get BRASS or BRONZE!

Switch to Permanent Mold Iron Castings Made by the Eaton Permanent Mold Process!

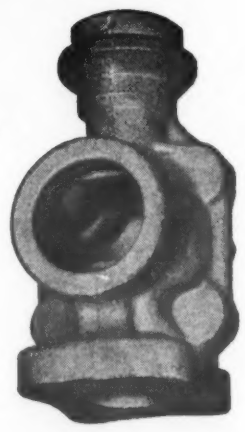
If you are finding it increasingly difficult to obtain Brass Castings or Bronze Forgings, a conversion to Permanent Mold Iron Castings produced by the Eaton Permanent Mold Process may be your answer—for these four big reasons:

1. PERMANENT MOLD IRON has a fine-grained homogeneous structure—a factor that makes it absolutely free of porosity.

2. PERMANENT MOLD IRON compares favorably with Brass and Bronze in machinability, can be worked with little change in present machine tool setup.

3. PERMANENT MOLD IRON is a lower base cost material.

4. PERMANENT MOLD IRON CASTINGS can be produced in complex, cored designs or simple shapes with accuracy and uniformity, by this patented EATON PERMANENT MOLD PROCESS.



In numerous conversion applications over the past ten years, Permanent Mold Iron Castings—made on our battery of rotating, 12-head, semi-automatic, volume-producing machines—have successfully met Industry requirements.

Let us give you the whole convincing story.

EATON

EATON MANUFACTURING COMPANY
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9773 FRENCH ROAD • DETROIT, MICHIGAN

IMMEDIATE DELIVERY OF METHYL CHLORIDE

We expect to be able to supply the current requirements of the refrigeration industry for Methyl Chloride, subject to the regulations of the War Production Board. Order what you need but please do not stock up unnecessarily. Electrochemicals Department, E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Delaware.

Important

Don't let idle cylinders hold up supplies now available. Look through your stocks and warehouses for any empty cylinders, or cylinders which can be emptied . . . *and return them promptly.*

DUPONT

METHYL CHLORIDE

Better Things for Better Living . . . THROUGH CHEMISTRY

Fig. 17. Equipment For Electrical Testing

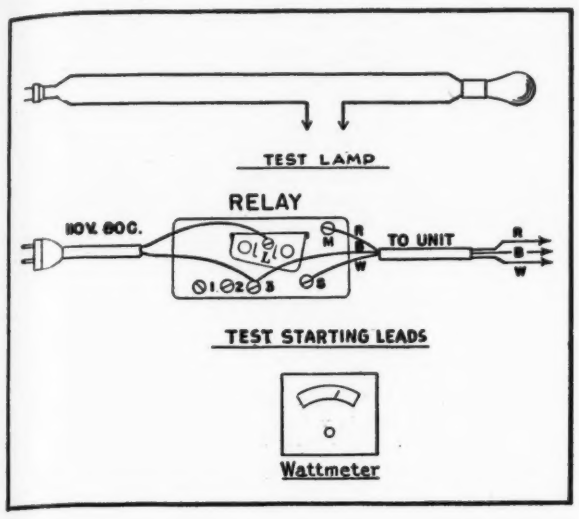


Fig. 17. An accurate, calibrated relay, wired as shown in this illustration, is a handy aid in diagnosing troubles in the 1939 sealed Kelvinator unit.

Fig. 18. Frame For 1939 Replacement Unit

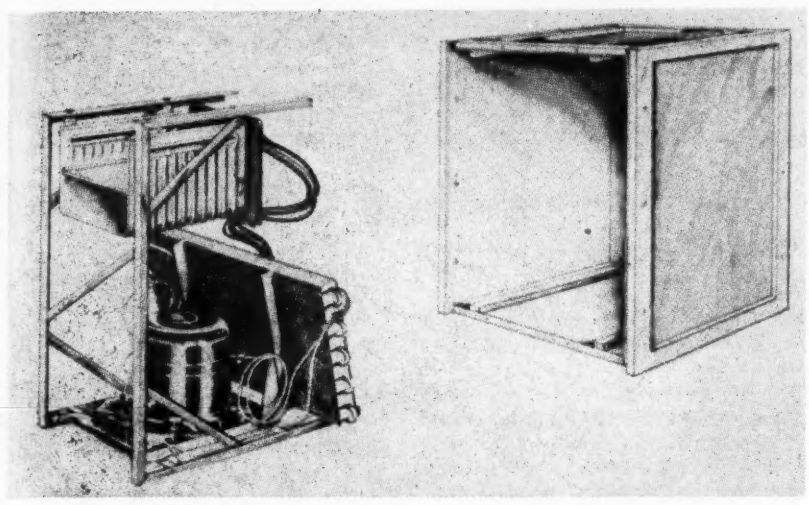


Fig. 18. A different type of replacement unit frame, as illustrated here, is used for the 1939 replacement units.

Servicing the 1939 Kelvinator System

(Concluded from Page 20, Column 5)

(E) Broken lines. Remove the lead unit base. Place the other test tip test lamp plugged into an electrical receptacle. In succession, place the test points in the following positions. Place the tips on L and M, two and three (thermostat closed), L and S, S and the white lead wire, three and the black lead wire, M and the red lead wire, three and the black lead wire, M and the red lead wire. The failure of the lamp to light indicates an open circuit between the points checked.

(F) Thermostat contacts open. Previous check under E covers this in a check between two and three.

(G) Ground in wiring. Remove the unit service plug. Remove the leads at the compressor. Plug in the test lamp at a convenience outlet, grounding one test tip to the condensing wires from the compressor. Use the successively on each of the three motor leads. If the lamp lights, a ground is indicated at that point. Reverse the plug in the socket and re-test. Lamp must light in both cases.

Changing 1939 Sealed Systems

The cooling unit, condensing unit and tubing constitute one sealed assembly.

Because of the change in design in 1939 units, it was necessary to devise a new replacement unit frame; this is shown in Fig. 18.

The system is bolted to the frame with the cooling unit in place. The entire framework simply slides into the crate. Bolting the cover on the crate holds the system in place. Installation through the back of the cabinet is handled as on previous models.

Today's Solder Is Different, So Change In Technique Is Advised

SCHENECTADY, N. Y.—Today's solder decidedly differs from prewar solder, and so should soldering technique.

Solder used to be composed of tin and lead in about 50-50 ratio; today, except for certain applications, solder contains not more than 20% tin, with perhaps small amounts of silver, bismuth, antimony or tin.

Today's soldering technique calls for a hotter soldering iron, and attention to certain details. How to make better soldered joints has been explained in a communication issued by the metallurgy committee of General Electric Co., which suggests to the user:

1. Keep your work clean. Guard carefully against varnish, grease, oil, dirt, rust, or corrosion products. They prevent the flux from acting and the solder from alloying with the parent metal.

2. Keep in mind that the purpose of the soldering iron or torch is not to melt the solder but to heat the work until the solder will flow when applied to the work.

3. Keep the soldering iron clean and, to have the quickest possible heat transfer from the iron to the work, have the tip designed actually to fit against the work.

4. Investigate different methods available for doing the work—hotter electric iron, high frequency, or carbon resistance soldering tools may do the job better.

5. Design your joints to have 0.003 to 0.005 in. solder thickness, and so that the two parts overlap. Lap or seam-type joints are better than butt-type joints. Have the solder fill the seam completely. Heavy fillets add little strength to the joint, and waste solder.

6. Don't hand a new solder, a flux, and a soldering job to a workman and expect a perfect job the first time. Let him get the "feel" of the new material. Don't give up a new solder after one unsuccessful trial—the chances are your technique is not what it should be for that particular solder.

Sold 95,000 Feet of Tubing; Is Suspended

PHILADELPHIA—Delivery of materials to Benjamin J. Landis, dealer in plumbing and heating supplies, has been suspended to Sept. 27, 1943, by ruling of the War Production Board on charges that he sold 95,000 feet of copper tubing without preference ratings in violation of General Limitation Order L-42.

Landis admitted delivering 6,000 feet of copper tubing on orders bearing no preference rating whatever and also fabricating copper and copper base alloy products into hot water heaters, pipe tube, and fittings subsequent to May 20, thus violating orders M-9-a and L-42, Schedule 7, WPB reports.

New Catalog Lines Up With L-126 Schedule

PITTSBURGH—Containing a guide to Schedule 4 of Limitation Order L-126, catalog R2 has just been published by Superior Valve & Fittings Co. here.

A special notice points out that the catalog lists only those items which may be manufactured for refrigeration and air conditioning systems under Schedule 4 of L-126. Other parts which may be available for uses other than in refrigeration and air conditioning systems are not shown in the catalog.

Products featured are diaphragm packless valves up to 1⅛ inch; diaphragm packless charging, purging, and drain valves; wing cap globe valves up to 2⅛ inches; diaphragm packless hand expansion valves; refillable dehydrators; heat exchangers up to three tons; and a complete line of fittings.

Western Metals Co. Appoints Fred Young

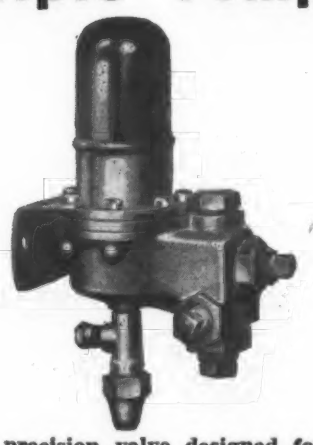
MILWAUKEE — Western Metals Specialty Mfg. Co. through its president, Alma E. Goetz, announces the appointment of Mr. Fred M. Young as vice president and member of the board of directors.

Mr. Young has long been identified with the Young Radiator Co. of Racine, Wis., serving as its president and general manager.

SNAP ACTION VALVES for Multiple Temperature

Adjustable from 20" of vacuum to 63 lbs. pressure

Proven in Performance



Differential 7 lbs. minimum to 29 lbs. max.

Free from bellows strain

Here is a marvelous precision valve designed for systems with more than one coil, operated from the same compressor. Any variety of units such as ice cream cabinets, soda fountains, back bars, water coolers, candy counters, beer coils, storage rooms, etc., may be connected to a single compressor unit by the use of an Aminco Snap Action Valve.

This means more today than ever before, what with the difficulties experienced by the serviceman in satisfying his trade with "too little" material for the work to be done.

Aminco Snap Action Valves are not an experiment. They have proven their worth in years of actual service and are doubly useful under today's conditions when one piece of equipment must do the work of several.

May be used with any refrigerant except ammonia. For flooded as well as dry gas types or any combination of either.

As always, our company is definitely interested in the survival of the refrigeration industry and is doing its utmost to cooperate with established operators.

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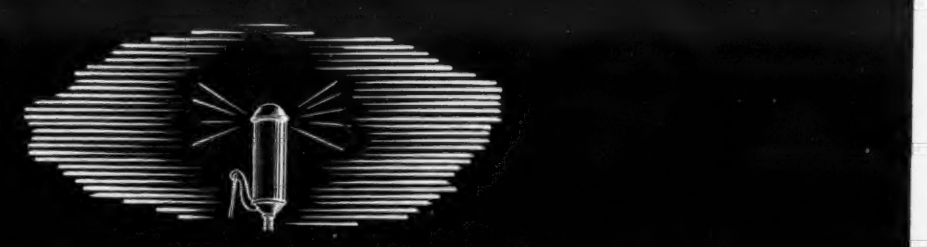

Dare We Speak of Peace?

Yes—because it means so much to all of us individually. With it will come again those products of industry like the car, the radio and the refrigerator, which never were luxuries as much as necessities. And you will find in the post-war world that Weatherhead will not only help build them for you then as we have in the past but we will also be building the many strange new products destined to emerge from this war.

Look Ahead with

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THE WEATHERHEAD COMPANY, CLEVELAND, OHIO
Manufacturers of vital parts for the automotive, aviation, refrigeration and other key industries.

Plants: Cleveland, Columbia City, Ind., Los Angeles
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Denial of Palatable Drinking Water For Soldiers & War Workers Is Called Result of a Controversial View

DETROIT—Why are America's fighting men, in camps in this country and at stations abroad, as well as the production warriors on our home front, unable to obtain equipment that will supply them with cold, palatable drinking water?

It is no secret that earlier in the year WPB officials had led manufacturers of water coolers to believe that they would be permitted to make a limited number of water coolers for use by the Army and in industrial plants. But "something" happened which killed off the expected authorization, and the WPB line now is that additional critical materials cannot now be allocated for such purposes.

Real reason why the program was killed, it is said, was opposition by an Army representative.

"We don't want our soldiers to get any luxuries that they're not going to have at the fighting fronts," the officer's line of reasoning is said to go, "and if the soldier's go without it, so can the workers in war plants."

Other Army officials take quite a different view, basing their conclusions both on logic and camp experience.

If this argument about "conditioning" the men were followed through to its logical conclusion the men in the Army should be started on field rations the day they hit camp, and be kept on them. This isn't done simply because the Army makes it a point to see that the men get nutritious food in camp—similar to and better where possible than that to which they have been accustomed—for the purpose of making them as healthly as possible.

Water isn't a food, but medical and scientific authorities are in agreement that consumption of proper amounts of water is a vital factor in good health. Research made in both the laboratory of the physiologist and the practical laboratory of industry have demonstrated that people will not consume sufficient amounts of liquids if they are warm and unpalatable.

Water is called second only to oxygen in importance to the body. It is a basic material for blood, and goodly supplies of it are needed to maintain the fluid character of the blood and tissue spaces. Lack of proper amounts of water has a deleterious effect on the body in many ways.

Lack of Water Is Injurious

Excessive dehydration is damaging to muscle tissue and skin tissue. The greater part of the muscle tissue consists of water, and serves as a kind of lubricant for the joints. Reduction in water consumption affects the character of the blood, and makes the individual more prone to shock.

Water is the "temperature regulator" of the body, and by making perspiration possible relieves the body of excess heat. It is a necessary factor in all the digestive processes, and in the excretion of waste from the body, insufficient water leading to constipation and its subsequent ailments.

For an experiment a number of persons of college age were put on a low water ration, with almost the universal result being headaches, nervous strain, inability to concentrate, and digestive disturbances. As soon as more water was given them, these symptoms were promptly relieved.

So much for this brief resume of the physiologist's answer to any plan for cutting down a man's water consumption—an answer that could fill a book full of scientific facts, if necessary. But does the Army's plan of conditioning men to be without liquids in camp actually work?

Soldiers Get Cold Drink Anyway

There is plenty of evidence that it doesn't. Leading makers of soft drinks make no bones in their advertising about the great amounts of their beverages that are consumed in Army camps. And a United Press dispatch of July 22 declared that "the government tonight was reported considering an order requiring that breweries set aside a portion of their beer production for the Army."

There is no issue involved of denying the soldier his right to a beer or his favorite soft drink if he desires it. But the water cooler industry contends that facilities should also be provided to put cold, palatable drinking water within relatively easy reach of the soldier.

That soldiers themselves don't take readily to the idea that they must drink tepid liquids that quench no thirst, even on the fighting fronts, has been evidenced by many stories that have come back from the fronts.

Cherished Item on Battlefronts

Typical is the story that the most welcome of all the improvements that finally reached Guadcanal was an ice-making system that made ice-water possible. On an African battlefront a soldier found a key for an American hotel room and the first thing that it reminded him of was "pitchers of ice water." And many are the stories of the ingenious methods used to cool beverages—from sending up containers in airplanes to digging holes in the sand and covering containers with precious gasoline—to cool the liquids by evaporation.

And it is consistent to give to our prisoners of war the things that we wish to deny our own fighting men? This seems far-fetched, but one manufacturer reports that within a week he had a priorities request turned down for U. S. vessels, while receiving an inquiry from a shipyard for water coolers to be placed on a boat to be used for transporting prisoners! The manufacturer was given assurances that priorities would be granted, he declares.

Called Cure For Absenteeism

As good, if not a better case, may be made for the installation of water coolers in war production plants. Early this year, Secretary of Labor Frances Perkins, struggling with the critical problem of absenteeism, raised the question publicly:

"... if the difficulty might be met to a substantial degree by scattering drinking fountains liberally throughout the nation's factories."

Section 12 of the "Basic Safety and Health Requirements" bulletin for establishments subject to Walsh-Healey Public Contracts Act declares.

"(d) **Drinking Water**—There shall be provided in all places of employment a supply of clean, cool, safe drinking water, approved by the local authority having jurisdiction.

"The common drinking cup is prohibited. When individual drinking cups (to be used only once) are supplied, a suitable container shall be provided for the disposal of used cups. Containers for drinking water from which the water must be dipped or poured shall not be allowed."

'Bucket' Method Spreads Disease

However, the "bucket and dipper" method of supplying cool drinking water, wherein chunks of ice are thrown in a pail and a common dipper is used by the workmen, has returned to many war plants. The attendant health hazards of such a method, with its great chances of spreading epidemics, are obvious.

The Food Distribution Administration's Manual of Industrial Nutrition, supposed to serve as an official guide to good food consumption and health practices in war plants, says simply:

"Water should be available at all times."

Earlier this summer the Cleveland Area Director for the War Manpower Commission made a public recommendation of "free beer and pretzels" for the workers. Since it seems quite unlikly that the beer was meant to be for the purpose of stimulation, it was indicative of the demand for thirst-quenching liquids.

Not only does a lack of drinking water impair the health and energy of war plant workers, but there is another factor involved—the time that must be spent in seeking out a cold, refreshing drink.

Walk For Drinks Wastes Time

In one war plant, it is declared, the process involved brings the ambient temperature to between 100 and 120° F. at all times, and the employes have to walk down two flights of stairs to get a drink of water.

The management noted that an employe will go for a drink at least six times a day and waste 15 minutes for each drink. In other words, an average of 90 minutes a day is wasted in this one plant alone, all because the workers cannot have a cold drinking water supply handy.

The water cooler manufacturers have done all that they could to substitute for the critical materials in their equipment, but there are some parts in which substiution is impossible. The industry as a whole has reduced the copper content in a water cooler from 35 to 13 pounds, with some manufacturers getting it down to as low as 7 pounds.

Materials Used But Once

And the water cooler manufacturers point out this salient fact—once the water cooler is built and put into use, it dispenses a cold, palatable drink without any further use of critical materials.

Last month Interpretation I to Order L-38 was issued permitting the delivery of water coolers to hospitals and new or enlarged industrial plants, but this order meant little because the delivery had to be out of existing stocks, of which there are hardly any. No provision was made for further manufacture of water coolers.

In the meantime, there are a lot of thirsty soldiers and war workers wasting a lot of time and energy and in whom much ill will is generated by dint of the fact that they have to search out a cold drink.

THAT "RECALIBRATOR" tells you two things about a gauge

1. GREATER ACCURACY AND STAMINA

When you find a gauge with the "Recalibrator" you've found a gauge that has behind it 75 crowded years of improving and perfecting gauge construction. Such a gauge offers the utmost in accuracy and stamina, with an outstanding service record to show how well it will meet today's greater responsibilities.

2. ACCURACY IS LOCKED IN

Nobody has ever found a way to build a gauge that can't be knocked or jolted out of adjustment. But Marsh has found the one basically sound way to correct such a gauge. A twist of the "Recalibrator" screw is all it takes, and the gauge is accurate again at all points on the scale. Unlike the ordinary "adjustment," the "Recalibrator" strikes at the root of the error—actually recalibrates the gauge by reestablishing the proper relation between the bourdon tube and the movement.

The "Recalibrator" is available on all Marsh Gauges, standard on all Marsh Dial Thermometers. You'll find the same kind of outstanding features throughout the broad Marsh line. Write for the big Refrigeration Catalog.

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Refrigeration Instruments

THAWZONE
Fully Protected by U. S. Patents
The PIONEER FLUID DEHYDRANT
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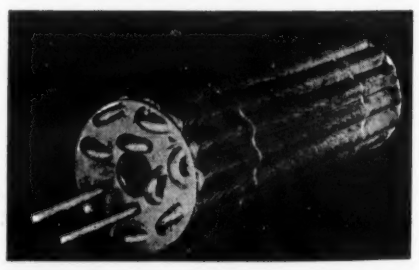
195 VERONA AVE. NEWARK, N. J.

No Joints! No Leaks

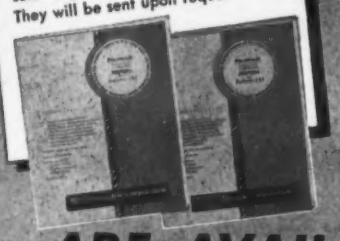


This Rome Jointless Water Cooled Condenser is a typical example of Rome's ability to provide trouble free condensing equipment. Rome Water Cooled Condensers are used by many leading compressor manufacturers. Write for complete information.

ROME-TURNEY RADIATOR COMPANY
222 Canal Street
ROME, N. Y.

Send For These Bulletins

Bulletins MU-182 and MU-183 contain information that is necessary in the selection of the right motor for the job. They will be sent upon request.



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ARE AVAILABLE FOR ALL OF YOUR EQUIPMENT USED IN WAR WORK!

FIELD ENGINEERING SERVICE

Wagner maintains 25 branch sales and service offices conveniently located throughout the United States. Each one of these branches is manned by trained field engineers who are ready to assist you in solving your motor application problems.

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Wagner Electric Corporation
ESTABLISHED 1891
6441 Plymouth Avenue, St. Louis, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

M43-10

Proposed Municipal Locker Plant Finds Eager Supporters In Winston-Salem, N. C.

WINSTON-SALEM, N. C.—Plans for the building of a utility-operated freezer-locker plant for this city were given evidence of strong public support when more than 60 citizens made $5 reservational deposits within the first two days after the idea's public presentation by Mayor George W. Coan, Jr.

There was an immediate response in the form of questions about the temperature to be maintained, storage room available, facilities for the preservation of quick-frozen foods, and the probable site of the plant, Mayor Coan reported.

The government will grant the city a building priority if 200 deposits are made, and he was confident that figure would be reached. The city's investment can be liquidated within 10 years, according to the comptroller's figures on the intended project.

In answer to the increased public interest in further information on the subject, the mayor prepared an open letter and made arrangements for its mailing to rural areas not thoroughly covered by newspaper subscription. Partial text of the letter follows:

"You have doubtless read in the newspapers that the city can probably purchase individual freezer-locker equipment to be installed at the City Market, provided necessary government priorities can be secured.

"In order that we may secure these priorities, it appears to be necessary to interest 200 citizens to deposit five dollars each at the City Water department or at any of the local banks to indicate definite and material interest on the part of the citizens for use of a freezer-locker.

"May we invite your cooperation by your arranging at your earliest convenience to deposit five dollars with your bank for said purpose?

"In Raleigh (N. C.), the two sizes of freezer-locker equipment in use are a 6-cu. ft. locker renting for $12 per year, and a 7½-cu. ft. locker renting for $15 per year.

"Your deposits will be returned if further developments prevent establishment of the plant."

Wholesale Food Spoilage Likely, New York Says

NEW YORK CITY — Wholesale food spoilage threatens this metropolis unless additional cold storage space is made available immediately, wholesalers reported here recently. All this in the face of actual shortages of many edibles.

Lack of refrigeration facilities caused the board of health to condemn 31,000 pounds of dressed poultry as unfit for human consumption, the report stated.

He Was Optimistic In Ordering 200 Lockers In 1941

Now Wishes He Had Installed 600

CULLMAN, Ala.—When Louis E. Hauk erected a 200-locker food storage plant here late in 1941, he doubted whether the city would support it. Now with every locker rented and a waiting list of 500, he wishes he had installed 600 lockers.

Mr. Hauk is president of the Cullman Ice Factory which was founded by his father, Ernest Hauk, nearly 50 years ago to supply ice for his own produce store as well as others.

Design of the locker plant called for 400 lockers, but the space which the 200 additional lockers would occupy is devoted to bulk storage. Mr. Hauk plans to make a zero-temperature room out of his present ice storage room so that it can be used for bulk storage, permitting the installation of 200 extra lockers, as was the original plan.

Most of the bulk storage space is taken up with strawberries, which Mr. Hauk packs in quantity, this being quite a strawberry district. In 1941 he packed 22,000 pounds of berries, and in 1942, 70,000 pounds. An abnormal fresh market demand for strawberries last year at a top price made growers hesitate to sell them to packers, otherwise he would have packed even more, he said.

Mr. Hauk packs the berries in 10 and 30-pound cartons, following capping in the field and washing and sugaring in the locker plant. One pound of sugar is added to each three pounds of berries. He also plans to pack peaches.

Standard rental charge in Mr. Hauk's locker plant is $10 a year for lockers. There are also charges of two cents a pound for processing pork and a one-and-a-half cents for beef.

Locker room measures 65 by 16 feet, the salt meat room, 22 by 12 feet, a chill room, 16 by 12 feet, and a quick freezer room, 9 by 6 feet. Refrigeration is supplied by a Lipman 6 by 6 compressor and a Vilter 4 by 4 unit, with the aid of an open-air louver type cooling tower.

400-Locker Plant Okayed For Lanett, Ala.

LANETT, Ala.—Lanett is soon to have a quick freeze plant with 400 lockers and an expert in this business, Eric Alsobrook, will be manager.

Mr. Alsobrook was former locker plant specialist with the Alabama Department of Agriculture and for a short time was with Pure Process Co., locker plant operators at Tuscaloosa, Ala.

The company which will operate the new quick-freeze plant will be known as The Valley Frozen Foods Co. It is a stock company, organized in Lanett.

The War Production Board agreed to releasing materials for the erection of the plant, provided 60% of the 400 lockers were rented in advance of construction, but all were rented. The yearly rental of $15 will be held in ecrow in the Citizens Bank & Trust Co. of West Point until the plant opens for operation.

1,000 Lockers Planned For Calif. Plant

VISALIA, Calif. — A 1,000-locker cold storage plant costing $50,000 will be erected here this fall for Stanley W. Smith, who now operates a similar plant in Tulare, Calif.

Property for the plant at the corner of Mineral King and Tipton streets has already been obtained. The building will be constructed in an L shape with outside dimensions of 75 feet. Extensive use of tile will be made to insure sanitation.

In addition to lockers, the building will contain bulk storage space and the usual freezing equipment. Four or five persons will be employed when the plant is in operation, Mr. Smith said.

Robert C. Fish and Felix K. Hawthorne, co-owners of Valley Refrigeration Sales & Service, Tulare, will construct the plant.

THE LOCKER PLANT OF TOMORROW MAY BE YOURS Today

NOW AVAILABLE

The W. P. B. permits building of these new type locker plants under certain conditions. Write today for details.

Salem's Automatic Self-Serving Locker Plant enables you to offer your customers *today* the convenience they expect and will demand after the war. They need not enter the cold refrigeration chamber to get their frozen foods. Remaining in your comfortable salesroom, they merely dial the number of their locker which automatically comes to the serving door. It freezes the food—not the customer.

ECONOMICAL OPERATION

Salem Self-Serving Locker Plants have 57% less BTU loss than Walk-In Types. Defrosting is unnecessary. More lockers can be put in less space. Thus you get more income at less operating cost.

SALEM ENGINEERING CO.
105 Ray Street . Salem, Ohio

Healthful Living Through FROZEN FOODS

Food Freezing

right on the farm will save time and money for tomorrow's Farm Family . . . And give them healthful variety at daily meals—farm-grown meats, poultry, game, vegetables, fruits the year 'round.

ARMY-NAVY "E" Awarded Ben-Hur for Excellence in War Production

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Remember the . . .

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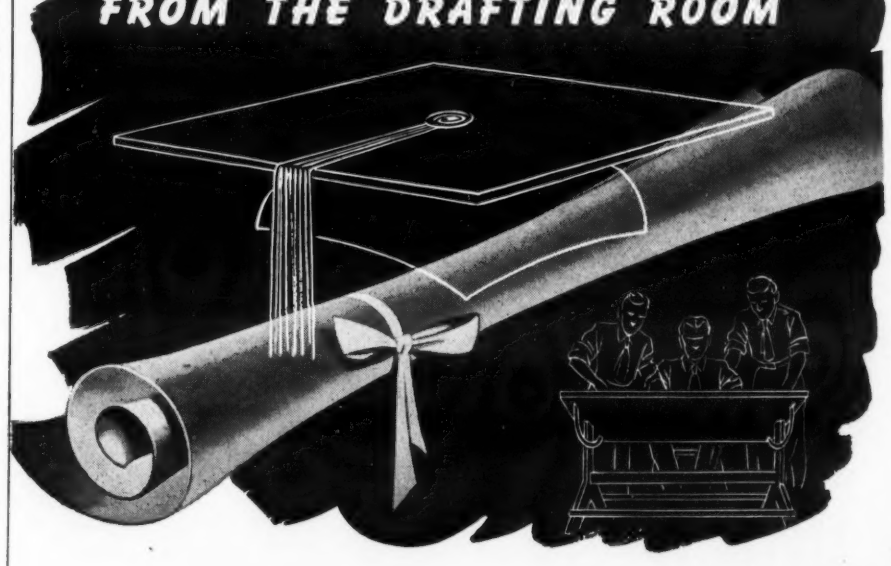
GRADUATING FROM THE DRAFTING ROOM

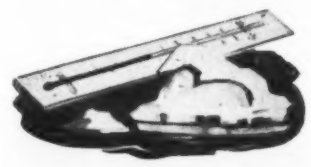


. . . THE AMCOIL FOOD CONDITIONER

This rolled-up set of blueprints looks like a diploma. Also like a diploma it marks a graduation, a transition from the design stage to actual construction.

Soon we expect to announce construction details on an Amcoil Food Conditioner. This is our most recently-designed unit, specially planned for use in Walk-In Boxes. This portable, compact conditioner will control moisture as well as temperature, permitting individual adjustments according to quantities or types of food stored.

The new Amcoil Food Conditioner will prove invaluable on transport planes, on combat and merchant marine vessels as well as for food conditioning after victory — in storage plants, packing plants, hotels and other industrial applications. This development draws on our wartime and pre-war experience in air-conditioning, refrigeration, high-and-low temperature testing.



Further information will be released soon.

AMCOIL AC AMERICAN COILS CO.
25-27 LEXINGTON STREET • NEWARK, N. J.

Are You Making Money?-Simple 'Balance Sheet' Answers This $64 Question

Here's One Way the Dealer Should Analyze His 'Books'

PITTSBURGH, Pa. — Bookkeeping is an important factor in the successful operation of an appliance service shop, but even more important is the regular proper analysis of the figures on the "books" to determine if the business is solvent, advises the West Penn Power Co. in a bulletin for dealers explaining how to set up a simple "balance sheet."

"A balance sheet gives a 'snap shot' of how your business stands at the moment balance is taken," the utility explains. "In these rapidly changing times, every dealer needs to look at his 'picture' at least quarterly, and in many cases, every month. By analyzing his balance sheet in comparison with that of the previous months he will know whether he is gaining or losing money. Thus he'll see his business in the same light that the credit man does."

Unless balance sheets are properly made, however, they will give the dealer a distorted picture, invariably too rosy, of his business, the utility cautions. With this in mind, West Penn Power officials outline a balance sheet, highlighting the pitfalls.

Every quarter, but preferably every month, the dealer should prepare his balance sheet by setting down his assets on the top half of a sheet of paper and his liabilities on the bottom. Subtracting the total liabilities from the total assets will give the dealer his net worth.

"Assets" are of two types, current and fixed, the utility points out.

Current assets comprise (1) cash actually in the till or in the bank, (2) accounts receivable, and (3) inventory.

Cash on hand ought to be at least 25% of total liabilities, warns the article.

Accounts receivable consist of the money other people owe the dealer, and should be kept below 20% of sales. Discounted notes or sales contracts should not be listed as accounts receivable. Money received from these discounted notes or contracts is to be included in the "cash" item, while unpaid balances of notes and contracts will be classified as a "contingent liability."

Inventory represents the total cost value of all salable merchandise, repair parts, etc., and in these times ought to be 50% or more of "current assets."

Fixed assets include building and equipment and goodwill. The dealer should estimate conservatively the present-day values of his furniture, fixtures, truck, and office and repair shop equipment. From this figure he should then subtract his "reserves for depreciation." Every month, the utility cautions, he must set aside money for his reserve fund to replace items in his fixed assets at the end of their estimated life.

Goodwill is to be rated at exactly $1, no more. "If you can get more when you sell your business—that's 'gravy'," explains West Penn power.

All the items mentioned up to now are added up to show the dealer his "total assets," which is the final figure placed on the top half of the balance sheet.

Liabilities are listed in four different divisions: current liabilities, fixed liabilities, contingent liabilities, and reserves.

Current liabilities include accounts and loans payable, that is, the bills and money the dealer owes other people, and accruals for taxes, payrolls, etc.

"It is important that you set aside **monthly** money to cover these accruing items you know you will have to pay," advises the utility. "This is especially true of the Federal Income Tax on your business. If you enter amounts only when you pay them, your balance sheet and net worth will show inflated figures the intervening months."

When the dealer pays his taxes in advance he has an asset, and the unexpired amount of such a prepayment should be carried as a "deferred charge" under current assets.

CHECK CURRENT FIGURES

At this point the dealer should check his current liabilities against his current assets. If his current assets are at least twice the size of his current liabilities, he probably has a safe margin of working capital, the utility says.

Fixed liabilities are mortgages and long-term debts applying to the business. In passing, the utility advises dealers to "make every effort to reduce these debts **now** to put yourself in a 'liquid' condition for meeting post-war situations."

Contingent liabilities cover discounted notes and sales contracts which the dealer will have to pay if the customer doesn't. Enough money should be set aside to meet the current unpaid balances of such notes just in case the customer falls down on his payments.

'RESERVES' ARE SMART

A smart dealer, the utility says, will also set up reserves to handle bad debts, damages, etc. A small reserve equal to about 2% of the dealer's "accounts receivable" should be sufficient, but when damage suits are pending, the dealer ought to set up enough reserves to meet the damages, in case he loses the suit.

Net worth of the dealer is the difference between his total assets and his total liabilities and reserves. This figure will be accurate only if the dealer has conscientiously "squeezed water" out of his asset items and set up sufficient reserves, the utility warns.

"Obviously your net worth should exceed your liabilities, or **you aren't worth as much as you owe,**" the utility explains, adding that net worth should be greater than fixed assets or the operation of the shop is giving the dealer no working capital to put back into the business. Working capital is the difference between current assets and current liabilities.

'JUST IN CASE—'

Total of cash and accounts receivable should exceed the dealer's current liabilities so that the dealer will be prepared if he should suddenly become liable for everything he owes.

Chief value of the balance sheet, of course, is that the dealer knows exactly what the financial status of his business is. By comparing this month's balance sheet with last month's, he can readily determine whether his position is improving or not, and such an analysis will bring to light dangerous conditions in his operation.

He will, if necessary, be able to put his finger on any part of his business that is causing financial trouble and correct the condition before it becomes too serious.

The balance sheet would also prove most useful to the dealer if he should have to undergo a government investigation or become involved in a tax argument.

'Pressed Metal Institute' Organized By Sheet & Strip Metal Fabricators

NEW YORK CITY—The Pressed Metal Institute, a recently organized group representing sheet and strip metal fabricators, rolling mills, and metal press manufacturers serving the industry, is headed by George E. Whitlock of the Mullins Mfg. Corp., Warren, Ohio as president, sponsors report.

Promotion of research, pooling of experience, and cooperation with government departments are named as major objectives of the organization. "The Pressed Metal Institute," says Mr. Whitlock, "has very definite plans for broadening the scope of war usefulness and has already developed a constructive, well-organized approach to postwar manufacturing problems."

Other Pressed Metal Institute officers are: S. J. Menzel, Motors Metal Mfg. Co., Detroit, vice president; and H. L. Moody of Stevenson, Jordan & Harrison, New York, secretary-treasurer and managing director. In charge of overall management of the Institute is a board of trustees composed of:

Frank E. Graper, Acklin Stamping Co., Toledo, Ohio; W. W. Galbreath, Alliance Porcelain Prod. Co., Alliance, Ohio; J. H. Robins, The American Pulley Co., Philadelphia; G. F. Ahlbrandt, The American Rolling Mill Co., Middleton, Ohio; William H. Miller, The Bossert Co., Inc., Utica, N. Y.; W. E. Porter, A. S. Campbell Co., Inc., East Boston; R. W. Glasner, Clearing Machine Corp., Chicago; G. H. Roberts, Detroit Stamping Co., Detroit; William J. Meinal, Heintz Mfg. Co., Philadelphia; W. C. DeMarlis, Heintz Mfg. Co., Philadelphia; Roy C. Ingersoll, Ingersoll, Steel & Disc Div. of Borg-Warner Corp., Chicago; I. R. Morris, National Formetal Co., Cleveland; K. T. Norris, Norris Stamping & Mfg. Co., Los Angeles; and George E. Whitlock.

In addition to its administrative offices at 19 West 44th St., New York City, the Institute has established an office at Press Bldg., corner of 14th and F Streets, N.W., Washington, D. C., so that continuous contact will be maintained with government departments responsible for production of war materials.

Auto Parts Industry Placed Under OPA Price Regulations

WASHINGTON, D. C. The $300,000,000 automobile parts industry was brought under price regulation recently by the Office of Price Administration, which will set most prices at their March, 1942, level.

Covered by the order are the sales of parts made by 2,500 manufacturers and distributed by 9,000 wholesalers, 44,000 automobile dealers, 60,000 repair and service stations and 240,000 garages and filling stations.

When a manufacturer establishes new resale prices he must notify all customers who ordinarily have his price lists and must file copies with the OPA.

POLARTRON

PRESSURE AND TEMPERATURE CONTROLS

Extra features equivalent to 32 or more *Special* models are STANDARD in every M-H Polartron.

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Refrigeration Controls and Control Systems

REPLACEMENT WATER-COOLED CONDENSERS

In stock for immediate delivery

Small size replacement condensers are in demand today. We offer immediate shipment on Freon and Methyl Chloride shell and coil condensers in sizes ⅛ to 5 tons and also shell and tube cleanable condensers in sizes ½ to 7½ tons. Write for catalogs No. 23 and No. 24.

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. . . the test of VALUE

THERE ARE many ways of determining values, but Time, the element that nothing can escape, is the true test of the quality of any product.

How well the product is made is discovered only after it is tested against the length of time it will operate efficiently without servicing.

This is the reason why Chieftain Compressors and Refrigeration units have been so widely accepted by men who know what to expect of the units they use. They know Chieftain's reputation for consistently manufacturing units that give years of trouble-free performance.

It is this recognition of Chieftain's reputation for quality products that causes leading manufacturers to "Standardize on Chieftain."

Remember: Before you decide on your postwar program, first investigate Chieftain.

Chieftain

TECUMSEH PRODUCTS CO.
TECUMSEH • MICHIGAN

Air Conditioning FOR TOMORROW

NIBCO WROT FITTINGS AND TUBULAR PARTS

NIBCO Fittings are so accurately made that they save substantial sums in assembly costs. Specially designed equipment and a unique patented process make NIBCO WROT Fittings absolutely "round and square" and easy to align. Individual inspection with plug gauge tests of every item eliminates all guesswork. More than 1,000 standard fittings and other items are shown in our Air Conditioning and Refrigeration Catalog. We also welcome your inquiries for special tubular or cast parts. Remember Nibco in your post-war planning.

NORTHERN INDIANA BRASS CO.

ELKHART, INDIANA

VALVES AND FITTINGS SINCE 1904

Staff of Instructors With Practical Experience Is Rounded Out at Camp Lee Refrigeration School

CAMP LEE, Va.—The training in the principles and practical applications of refrigeration which has been given hundreds of trainees at the Quartermaster Replacement Training Center's Refrigeration School at Camp Lee has been given by an instructional staff of wide experience.

Head of the school is Maj. Allan N. Johannesen, who was connected with the ice plant operation and maintenance division of the Florida Power and Light Co. after studying engineering at Purdue university. Major Johannesen has had wide experience in maintenance work on power and refrigeration equipment of all kinds.

CAPT. ROBERT CROPPER

Captain Robert O. Cropper is a graduate of the University of Kentucky in mechanical engineering. He was three years with E. I. du Pont de Nemours and Co., Birmingham, Ala., and Newport, Dela., as power plant engineer supervising maintenance of refrigeration equipment for the manufacture of nitroglycerine. Later he was with the Utilities Branch, Corps of Engineers, at Fort Knox, Ky., for six years as chief operating engineer of refrigeration and heating equipment, including cold storage and ice plant. He has been an instructor in the Refrigeration School since May 25, 1942.

LIEUT. MAX FANNING

Lieut. Max B. Fanning attended Bates College and the University of West Virginia, where he majored in mathematics. He was with the Northeastern Sales Corp. (now the Lewiston Maytag Co.), Lewiston, Me. As production manager, he supervised the maintenance of all refrigerating equipment sold by the company.

LIEUT. ORCUTT

Lieut. Ralph E. Orcutt was in the research department of the Carrier Corp. at Syracuse, N. Y., prior to his entering the Army. Inducted in February, 1941, he serviced refrigeration equipment at Camp Blanding, Fla., for two months. He was then transferred to Iceland, where he was in charge of refrigeration for the Quartermaster Corps for 14 months. He was commissioned in February, 1943, following training at the Quartermaster Office Candidate School at Camp Lee.

MASTER SGT. MATTSON

Master Sergeant Elton W. Mattson did general commercial and domestic refrigeration service work while attending high school. He was refrigeration engineer for the Chrysler Airtemp Corp. of Minneapolis, Minn., and later was with Peerless of America Co. in Chicago, where he did silver soldering, service repairs and engineering work. He entered the Army in 1941, and has been an instructor in Refrigeration School since March of that year.

STAFF SGT. BURGARD

Staff Sergeant William L. Burgard was with the York Ice Machinery Corp. for over two years as a student, erecting and servicing various types of refrigeration equipment, commercial and industrial. Later, he was with the Elliott Lewis Co., Philadelphia, as sales engineer. Upon induction into the Army he served with the 30th Engineers as maintenance man and operator for air conditioning units on mobile topographical map reproduction units. He was assigned as instructor in Refrigeration School in January, 1942.

SGT. WOLFF

Sergeant Edmund B. Wolff has had wide experience in servicing domestic and commercial refrigerating units. He was employed by the Acme Refrigeration Co., the Dahill Refrigeration Co., and the Consolidated Refrigeration Service Co., all in the New York City district.

SGT. COPANAS

Sergeant Peter N. Copanas served as ice cream maker's helper for the Dolly Madison Ice Cream Co., Syracuse, N. Y., and as ice cream and mix maker for the Queen Anne Ice Cream Co., Syracuse, owned and operated by his family. In the latter company he supervised the making of the ice cream and mix, and tested for butterfat and for sourness. He helped install a 45-ton refrigerating system. He has been instructor at Refrigeration School since October, 1942.

SGT. SUDLER

Sergeant Harold M. Sudler, a native of Connersville, Ind., was formerly employed by the Akron, Ohio, Board of Education. He holds a second-class stationary steam engineers license in Ohio. He studied refrigeration at the Hower Trade School in Akron. He has been an instructor at Camp Lee since January of this year.

CPL. GRIFFING

Corporal Melvin E. Griffing, of Bridgehampton, N. Y., was a service engineer for three years with the Kelvinator Corp. In 1937 he organized the Eastern Refrigeration Service at Bridgehampton and operated it until induction in the Army in December, 1942. He attended the Rennselaer Polytechnic Institute.

CPL. DI CESARE

Corporal Fred P. Di Cesare was educated at Ohio State and Louisiana State Universities. He received the B.S. degree in Mechanical Engineering from L.S.U. in 1933, and has had 10 years of practical experience in general steel mill practices such as mechanical operation and erection. He invented, manufactured and sold the D. C. Coupling. He has had four years of practical experience in building a commercial refrigeration business, as owner, salesman, engineer, detailer and mechanic. Also while employed by H. P. Jones, consulting engineer for the city of Toledo, Ohio, he did layout work and inspected the city sanitary drainage and disposal plant. He has been teaching at Camp Lee's QMRTC Refrigeration School since February, 1943.

Servel Arranges For Exchange or Sale of 'Scarce' or 'Dead' Items In Field Stocks

EVANSVILLE, Ind. — Numerous calls from various firms seeking odd pieces of material have prompted Servel, electric refrigeration and air conditioning division, to establish a "clearing house" for information on the location of valuable "dead" stocks of merchandise, accessories, parts, etc. which may not be moving but are badly needed elsewhere in the country, announces E. A. Terhune, sales manager.

If enough interest is shown by the trade in this effort, Servel will make up a "Want Ad" bulletin listing the available equipment and mail it to all its customers, explains W. J. Aulsebrook, assistant sales manager, in a letter recently sent out.

Accompanying this letter is an entry blank for what Servel aptly calls the "rummage sale." Participants are asked to list the "dead" items they have, specifying make, size, condition, and cash price, as well as indicating equipment they wish to buy.

While Mr. Aulsebrook points out that Servel's primary interest in this venture is in commercial refrigeration items such as coils, valves, tubing, motors, fans, cabinets, etc., he suggests that participants also list scales, slicers, display stands, service tools, tanks, drums, beer faucets, etc.

In preparing the "Want Ad" bulletin, Servel will limit individual firms' lists to reasonable length and eliminate inappropriate items. No "blind" listings will be accepted for publication, for Servel does not wish to handle any correspondence on the actual sales, Mr. Aulsebrook explained. Servel's part in the picture is simply that of passing the information along to interested parties free of charge and the company will assume no responsibility in any transactions.

We have for sale:

Item	Size	Make	Condition*	Cash Price
.....				
.....				
.....				
.....				
.....				

*Condition code—
NIOC—New—In original crate
LN —Like new
G —Good
F —Pair

We want to buy:

Item	Make and Model (or equal)
.....	.....
.....	.....
.....	.....
.....	.....

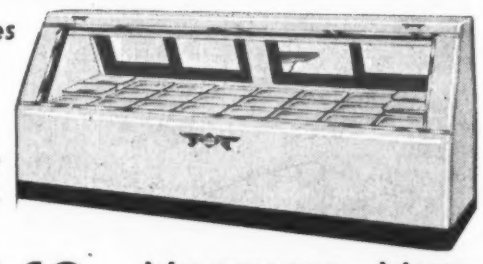
We understand that in handling publicity on this "Rummage Sale" Servel, Inc. makes no charge for the service and will not attempt adjustment of differences that may arise, and assumes no responsibility in the ensuing transactions involving the above merchandise.

Signed .....
Firm Name
Street Address .....
City and State .....
By ....
Title

Mail to Servel, Inc.
Electric Refrigeration & Air Conditioning Div.
Evansville, Ind.

SELL SHERER REFRIGERATOR EQUIPMENT

A Limited Number of All Types
Available Without Priority
For Immediate Shipment



Reliable source for complete line of refrigerated display equipment. *Write for franchise details.*

SHERER-GILLETT CO., MARSHALL, MICH.

Our service on all properly rated orders will surprise you. Prompt shipments, parts, supplies, tools, tubing.

TED GLOU
CENTRAL SERVICE SUPPLY CO.
409 E. Jefferson St., Syracuse, N. Y. Phone 5-4000
209 Jefferson Ave., Scranton Pa. Phone 3-4000

DEVELOPED TO DO ONE JOB
...and do it Perfectly

THAT'S WHY
DAVISON'S Silica Gel
OUT-PERFORMS ALL OTHERS

There is nothing strange in the fact that Davison's Silica Gel out-performs all others. It should—it is "custom-built" for refrigeration service.

Processed to meet the industry's strictest drying agent requirements, it has proved that moisture troubles can be eliminated completely.

You can't afford to waste even minutes trifling with silica gel that is less carefully manufactured. You can get the real Davison's . . . and KNOW it will do its job to perfection.

ONLY 'DAVISON'S' GIVES YOU ALL 6
1—GREATER CAPACITY—1½ to 2 times as much as other types of drying agents.
2—ACTS INSTANTLY.
3—REMOVES ACIDS.
4—WILL NOT DUST NOR POWDER.
5—WILL NOT "CHANNEL" IN CARTRIDGE.
6—GIVES BETTER CLEAN-UP.

THE DAVISON CHEMICAL CORPORATION
Industrial Chemicals Department
BALTIMORE-3, • MARYLAND

DAVISON'S *Accelerated* **SILICA GEL**

PORTABLE ENGINEERED COOLING FOR INDUSTRY

Announcing

THE
FROSTRODE
COOLANT COOLER

To meet today's precision requirements in high production, coolant temperatures must be controlled when grinding or machining parts.

The new Frostrode Coolant Cooler is designed to do that job. Portable, packaged, self-contained, installed in a few minutes, compact, it has gone through the severest of production tests with flying colors.

Write today for Bulletin No. 75AC describing this important contribution to improved production quality, greater production, material conservation and cost reduction.

REFRIGERATION DISTRIBUTORS
Here's another line you can sell now!

by the originators of the now widely demanded ZERO-WELDING process

Packaged portable cooling units ready to install

Adaptable also for general purpose cooling, X-Ray & Photo baths, etc.

FROSTRODE PRODUCTS
19003 JOHN R STREET • DETROIT 3, U. S. A.

Fiscal Figures

Armstrong

LANCASTER, Pa.—The Armstrong Cork Co. report to stockholders shows a net income of $1,714,299 or $1.14 a common share, for the first six months of 1943 compared with $1,405,003, or $.92 a share for the first half of 1942. Before provision for federal income and excess profit taxes, Armstrong's net income for the first half of the year stood at $3,687,505 as against $5,333,093 for the corresponding period last year.

Of the $53,383,346 reported as total sales in the U. S. for the first six months of this year, H. W. Prentis, Jr., president of the company, discloses that $14,200,000 represents billings of the Munitions division. Domestic sales alone in the first half of 1942 amounted to $40,707,705.

VISOLEAK

SAVES time — SIMPLIFIES leak detection problems — CONSERVES refrigerant.

VISOLEAK reveals "hard to find" leaks of all refrigerants. Add 4 oz., plus an extra ounce for each 10 lbs. of refrigerant, to system.

4 ounces, $1.00; 8 ounces, $1.75. Pint, $3; Quart, $5; Gallon, $16.

Buy from your jobber or write to

Western Thermal Equipment Co.

5141 Angeles Vista Blvd. Los Angeles 43, Calif.

Philco

PHILADELPHIA — Consolidated net income of Philco Corp. of $2,209,992 or $1.16 per share for the year ended Dec. 31, 1942 remains unchanged following final renegotiation of the company's war production contracts for the year, it is announced by John Ballantyne, president.

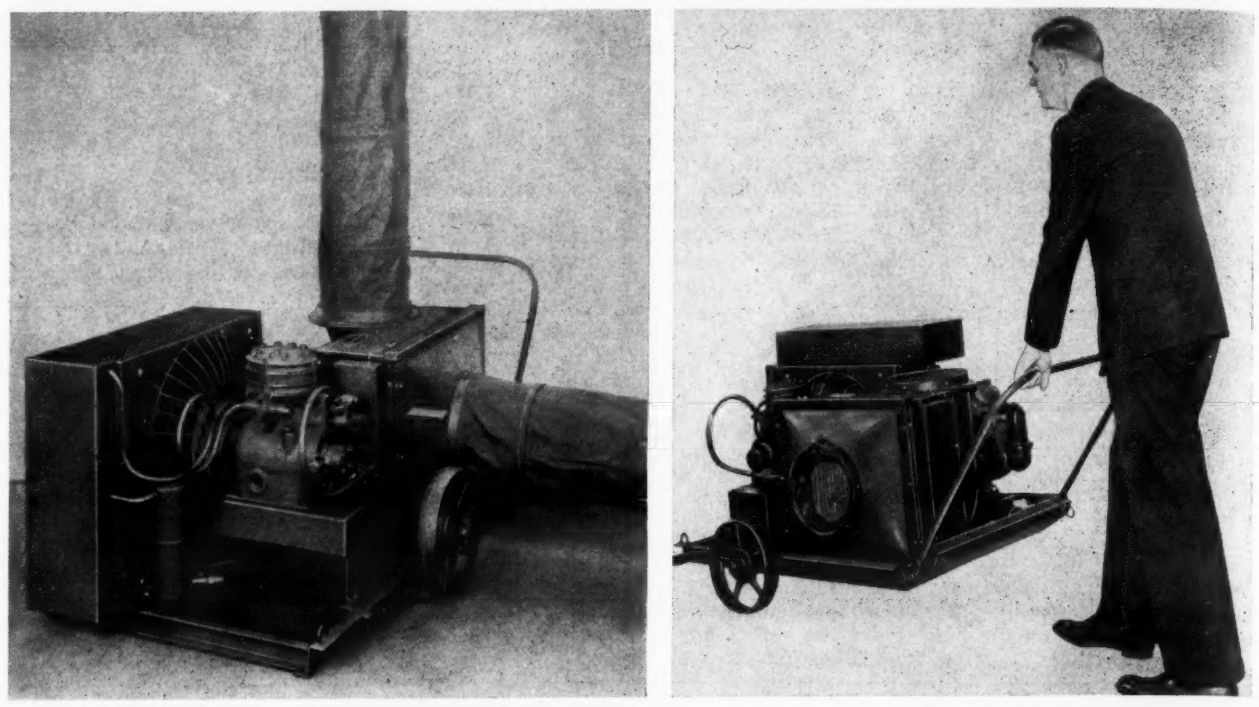
The effect of an agreement between the company and the price adjustment board of the War Department, covering work done for both the Army and the Navy, after allowing for changes in income and excess profits taxes, resulted in a net adjustment of $220,350 which was provided for in the $1,000,000 reserve for contingencies established in 1942.

Liquid Carbonic

CHICAGO—Liquid Carbonic Corp. reports for the quarter ended June 30 a net profit of $403,456, after $75,000 provision for war contract contingencies, or 51 cents a share compared with $511,468, or 65 cents a common share, for the same quarter in 1942, and $125,603, or 13 cents a share for the March, 1943 quarter.

The corporation's report for nine months ended June 30 shows a net profit of $587,908, or 67 cents a common share, after $225,000 provision for war contract contingencies and $1,007,297 income and excess profits taxes, against $812,497, after provision for income and excess profits taxes of $877,169, or $1.05 a share a year ago.

New Mobile Cooler & Dehumidifier Aids Armed Forces



Carrier Corp.'s mobile cooler and dehumidifier as set up for operation (left). Note ductwork. When folded up like a baby carriage (right), the unit is easily moved. Retractable wheels and sled bottom permit towing over rough ground.

* * *

SYRACUSE, N. Y. — A mobile cooler and dehumidifier for use by the armed forces in a variety of vital operations is now in production at the plant of Carrier Corp.

"Equipment of this type can fill a number of long-standing needs," explained E. T. Murphy, vice president. "For example, when the broiling sun is running up temperatures of 150° to 160° inside an airplane that is being repaired or serviced, even the most hardened mechanic can stand the stifling heat for only a few minutes at a time. And even then his efficiency is impaired by the conditions under which he must work. The new Mobile Cooler and Dehumidifier, wheeled up beside the plane would deliver cooled air through canvas ducts permitting him to work on the job until it is done well and quickly.

Speedy developing and printing of aerial and other photographs is impossible in stifling-hot dark rooms. Radar, radio, telephone, and similar operations where extreme alertness is vital are handicapped under turkish bath conditions. Excessive heat and humidity in field hospitals are an added strain on doctors and nurses who must continue for long hours to care for wounded men. The mobile unit has been designed to meet these and other situations."

The equipment combines cooling with dehumidifying and filtering and circulation of air. This triple function is particularly vital in the repair, adjustment, and calibration of the delicate instruments which are so widely used in modern warfare—bombsights, gunsights, radio equipment, and the like.

High temperatures induce perspiration, the acid contents of which corrodes steel and even non-ferrous parts when handled.

High humidities rust steel parts, mildew, or shorten the life of many other materials. They can cause interrupting current leakages in electrical equipment.

The Mobile Cooler and Dehumidifier is completely self-contained and lightweight.

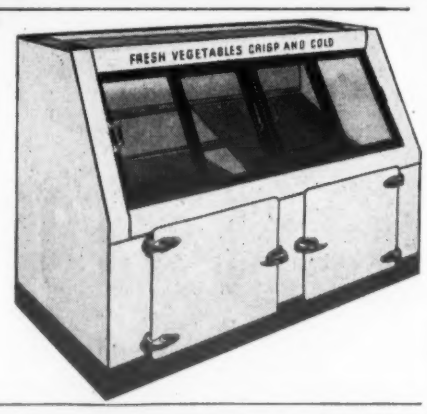
The unit is highly mobile and can be wheeled like a baby carriage on hard surfaces. It has retractable wheels and a sled-like bottom with rings attached for towing through sand or over soft ground.

THE HARRY ALTER CO.

1728 S. Michigan Ave. Chicago, Ill. | Two Big Warehouses to Serve You | 134 Lafayette St. New York, N. Y.

TRY TYLER

Tyler's amazing progress in recent years represents a trend that will continue in the future. Investigate the profit possibilities for Tyler distributors; tie up with Tyler for long-swing prosperity. Write today. TYLER FIXTURE CORP., NILES, MICH.



Save Money AND MATERIAL

WITH **HASCO** REBUILT PARTS *Guaranteed Equal to New*

● Our catalog lists 225 parts ready to ship, priced to save money for you and your customer. Every item completely cleaned, adjusted, gauged and fitted to give service equal to original equipment. For instance, rebuilt Frigidaire Float Valve, like new for $2.50 and your old valve. Unconditionally guaranteed for 90 days! Get our free illustrated catalog. Write today!

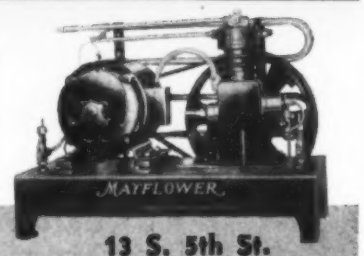
HASCO, INC.

GREENSBORO, N. C.

GENUINE *MAYFLOWER* UNITS & PARTS

Complete stocks of genuine Mayflower parts are now available. Full line of air and water-cooled condensing units is also available to meet your priority requirements. Order from your jobber or from the manufacturer. Insist on genuine Mayflower parts.

Jobber inquiries invited.



MAYFLOWER PRODUCTS, INC. 13 S. 5th St. Richmond, Ind.

Landers, Frary & Clark Promotes Russell, Brown

NEW BRITAIN, Conn.—Appointment of W. J. Russell to the post of vice president in charge of engineering, and of L. A. Brown to vice president in charge of manufacturing and works manager for all plants, was announced recently by R. L. White, president of Landers, Frary & Clark, manufacturers of Universial household appliances.

Mr. Russell came to Universal from Westinghouse Electric & Mfg. Co., where as manager of engineering he was awarded the order of merit for distinguished service in the field of engineering last January.

Born in Edinburgh, Scotland, in 1894, Mr. Russell studied mechanical engineering in college but quit school before graduation to enlist in the Royal Field Artillery. He was wounded twice, gassed three times, and won four service decorations, including the Meritorious Service Medal.

Coming to the United States in 1920, he went to work assembling automatic devices for the R. J. Hoe Printing Press Co. of New York, but in 1924 joined Westinghouse at Springfield, Mass., as a tool and die maker, and attended their school of motor design.

L. A. Brown has been with Landers, Frary & Clark from the beginning of his career. Born in New Britain in 1905, he went to work for them in 1921 upon graduation from State Trade School there.

Placed in charge of the home laundry equipment tool department in 1929, he became head of all machine and tool rooms in Universal's Lower Plant two years later. He was named mechanical superintendent for all Universal plants in 1938, and in 1941 works manager of the Lower Plant, then producing entirely under government contract.

Vice Presidents Now

W. J. RUSSELL

L. A. BROWN

ARMY E NAVY

M&E EST. 1866

COMPRESSORS FOR EVERY COMMERCIAL PURPOSE

Write for catalog

MERCHANT & EVANS CO. PHILADELPHIA

Plant: Lancaster, Pa.

STEEL COILS FOR REFRIGERANT and BRINE

KRAMER TRENTON Co.

Heat Transfer Products

TRENTON, N. J.

★ **CORDLEY** *Electric*

WATER COOLERS

ALL SIZES FOR SHIPBOARD AND LAND USE MEET GOVT. SPECS.

CORDLEY & HAYES, NEW YORK, N. Y.

CLASSIFIED ADVERTISING

RATES for "Postions Wanted," 5¢ per word; minimum charge, $2.50. Three consecutive insertions, 12½¢ per word; minimum charge, $6.25.

EQUIPMENT FOR SALE

FOR IMMEDIATE DELIVERY: Two 3 ton self-contained units, $900.00; one 5-ton self-contained unit, $1100.00; and one 5-ton central plant, $1100.00. All new. F.O.B. New York City. TYPHOON AIR CONDITIONING CO., INC., 252 West 26th St., New York City.

1 EACH Marlo Model 105 and 140 low temperature ammonia units, used 60 days, F.O.B. Houston, $513.00. Baudelet water cooler for bakery or bottler, used 16 months, F.O.B. Houston, $1,100.00. P. O. Box No. 8066, Houston 4, Texas.

APPROXIMATELY 200 TONS York floor type Freon air conditioning coils with blowers and motors — complete — various sizes—practically new. EVERLAST REFRIGERATION CORP., 444 Fourth Ave., New York, N. Y.

POSITIONS AVAILABLE

WANTED GENERAL MANAGER—Qualifications desired: Graduate engineer with manufacturing experience and executive ability to handle all departments of a large refrigeration manufacturer of high side equipment. This is a permanent position with old established and well financed company. State full particulars regarding age, marital status, draft classification, nationality, experience, education, etc. Confidential. Box 1465, Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

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ENGINEERED TO YOUR EXPECTATIONS
BUNDY TUBING CO., DETROIT

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PENN BRASS and COPPER TUBING
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TRIPLE SEAL DIAPHRAGM VALVE
Longer Diaphragm Life
Positive Sealing at Three Essential Points

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COOLING & FREEZING UNITS
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We Sell Thru
Distributors of refrigeration and insulation. Get particulars on our NEW
Master Food Conservator
the Modern way to Conserve food
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400,000 Master Food Conservators In Use

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Refrigeration Hermetic Units
Compressors, and Parts.
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PAR
COMMERCIAL REFRIGERATION UNITS FOR PROTECTION OF VITAL FOOD SUPPLIES
See Your Par Jobber
LYNCH MANUFACTURING CORP.
DEFIANCE, OHIO, U.S.A.

Established CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL 1864
Curtis Refrigerating Machine Division
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1912 Kienlen Ave. St. Louis, Mo.

Continental
FARM LOCKER PLANT
SANITARY REFRIGERATOR CO.
FOND DU LAC. ★ WISCONSIN

Electrimatic
Automatic Control Valves and Regulators
2100 Indiana Ave., Chicago, Ill.

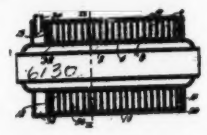
AMANA
Commercial REFRIGERATION
Modern Display Cases
Coolers, Refrigerators
AMANA SOCIETY, AMANA, IOWA

REFRIGERATION ENGINEERING Inc.
LOS ANGELES - CALIFORNIA

PATENTS

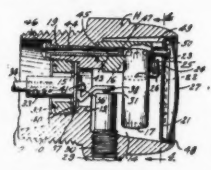
Weeks of Aug. 10 & 17

2,326,130. REFRIGERATOR. Nils Erland af Kleen, Stockholm, Sweden. Application July 22, 1939, Serial No. 286,011. In Sweden Nov. 21, 1938. 23 Claims. (Cl. 62—79.)



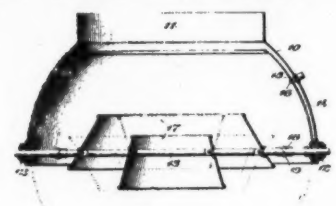
4. The method of charging a boiler absorber of an absorption refrigerating system operating with dry absorbents having the characteristic of swelling upon taking up the refrigerating agent, which consists in placing in said boiler absorber 4—8 gram molecules of water-free absorbent pulverized so finely as to provide a mass of sufficient volume to occupy 60 to 95% of each liter of net volume of the boiler absorber, whereby from 40% to 5%, respectively of the net volume of said boiler absorber is left free to allow said salt to swell upon the first absorption of the refrigerating agent.

2,326,574. PRESSUE GAUGE FOR USE WITH AIR VOLUME CONTROLS. Burton E. Shaw, Bristol, Ind., assignor to Penn Electric Switch Co., Goshen, Ind., a corporation of Iowa. Application Oct. 23, 1939, Serial No. 300,815. 3 Claims. (Cl. 73—109.)



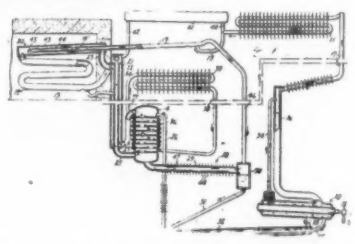
2. In a structure of the kind disclosed, a housing having means on one end portion thereof for pneumatic connection with the interior of a tank, said housing having a recess forming a chamber in the other end portion thereof, a partition in said housing between said end portions, a dial plate spanning said recess, gauge mechanism having means responsive to pressure and provided with a mounting boss within said chamber back of said dial plate, and means for communicating presure from said first end portion of said housing through said partition to the pressure responsive means comprising a tubular screw through said partition and entering said mounting boss, said mounting boss having a passageway affording communication between said screw and the pressure responsive means.

2,326,858. AIR OUTLET DEVICE. Friedrich Honerkamp and Franz J. Kurth, *NewYork, N. Y., assignors to Anemostat Corp. of America, a corporation of Delaware. Application July 9, 1941, Serial No. 401,662. 16 Claims. (Cl. 98—40.)



1. An air outlet device comprising a plurality of successively smaller open-ended hollow flaring members spaced apart successively inwardly of one another to provide a plurality of air passageways, therebetween, an air supply duct, pivot means rotatably mounting said members in air receiving relationship to said duct for reversal to dispose either the smaller or the larger ends of said members rearwardly for delivery of air from said duct into either the smaller or the larger ends of said members are disposed forwardly and from said device in diffused form when the larger ends of said passageways, whereby air is delivered in blast form when the smaller ends of said members are disposed forwardly, and means cooperating with said device and said duct to cause supplied air to flow through said passageway in either position of said device.

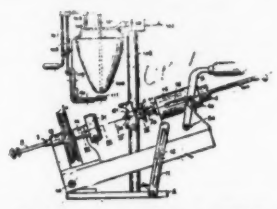
2,326,900. REFRIGERATION. Albert R. Thomas, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application Oct. 18, 1939, Serial No. 299,919. 10 Claims. (Cl. 62—119.5.)



8. A refrigerating system having an evaporator in which liquid refrigerant evaporates into an inert gas, means including a pipe for conducting inert gas to said evaporator, and means including a conduit for conducting in the presence of each other liquid refrigerant to said evaporator and inert gas from said pipe, a portion of said conduit being enveloped by said pipe and another portion being disposed outside said pipe.

2,326,967. MANUFACTURE OF AIR FILTERS. Armand Jacques Julien Poelman, Paris, France; vested in the Alien Property Custodian. Application June 3, 1941, Serial No. 396,457. In France, Jan. 11, 1939. 5 Claims. (Cl. 93—1.)

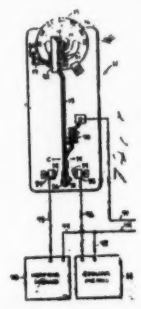
1. Machine of the type described, particularly adapted for fixing a filter to a mounting and comprising, in combination, a frame, a base plate pivoted to this frame and inclined by an adjustable angle with respect to the horizontal, on this base plate two supports arranged at different heights, a mounting carrying member adapted to receive said mounting and mounted rotatably on the support mounted below the other one on said base plate, a filter carrying member adapted to receive the filter to be fixed and rotatably and slidable mounted on the second support arranged above the other one on said inclined base plate, means for rotating said mounting carrying member, means for moving said filter carrying member and said mounting carrying member towards one another for bringing the filter into contact with the mounting, means for rotatably coupling said filter carrying member with said mounting carrying member before bringing the filter into contact with the mounting, means for supplying said mounting carrying member with an amount of lute necessary for sealing said filter to said mounting.



2,327,041. HEAT EXCHANGE MATERIAL. Lyle O. Hill and Leland W. Short, Chicago, Ill., assignors to The American Dairy Cattle Club, Chicago, Ill., a corporation of Illinois. No Drawing. Application Jan. 12, 1942, Serial No. 426,488. 5 Claims. (Cl. 62—170.)

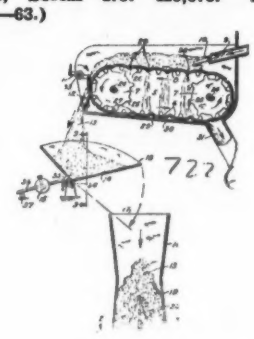
1. A process of preserving a specimen at a temperature between about 32° and 50° F. for an indefinite period which comprises introducing said specimen into heat exchange relationship with a eutectic mixture of an amine selected from the group consisting of monoethanolamine and ethylene diamine and a compound capable of depressing the melting point of the amine to the temperature at which it is desired to maintain said specimen, said mixture undergoing a change of state during said period.

2,327,208. CONTROL DEVICE. Alwin B. Newton, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis,. Minn.,. a. corporation. of Delaware. Application Sept. 15, 1941, Serial No. 410,814. 20 Claims. (Cl. 200—139.)



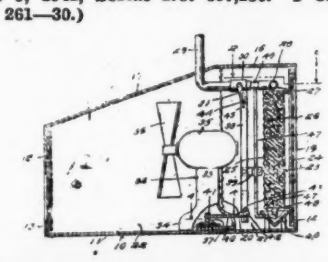
1. A control device comprising a magnet having first and second poles, an elongated movable element of magnetic material connected at one of its ends to the first of said poles, an armature of magnetic material adjacent the other end of said element and cooperable therewith to produce a magnetic snap action, and magnetic means for completing the flux path from said first pole through said element and said armature back to said second pole.

2,327,226. SNOW ICE FEEDER AND DISTRIBUTOR. William H. Taylor, Waukesha County, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis., a corporation of Wisconsin. Application Jan. 5, 1942, Serial No. 425,673. 7 Claims. (Cl. 83—63.)



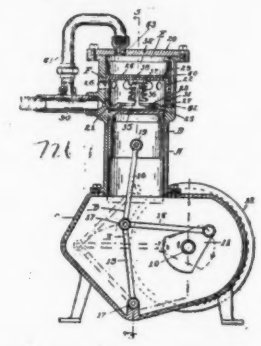
1. In combination, an endless slat conveyor having an upper deck provided with a series of drainage hoppers and a semi-cylindrical delivery end adjoining said deck, means for constantly depositing a stream of relatively wet slush ice upon said deck remote from said delivery end, means coacting with said delivery end to constantly remove dehydrated snow ice therefrom, a casing formed to receive the snow ice from said conveyor, a tiltable weighing bucket disposed beneath said conveyor delivery end and above said casing for automatically delivering successive measured batches of snow ice from the conveyor to the casing, and a rotor in said casing formed to initially disintegrate the snow ice and to thereafter deliver the same from the casing in the form of a uniform spray of finely divided dry snow ice.

2,327,242. AIR CONDITIONER. Clarence A. Bolcom, Ionia, Mich. Application June 9, 1941, Serial No. 397,286. 1 Claim. (Cl. 261—30.)



An air conditioner comprising a housing including perforate opposite end walls, an inner perforate wall dividing the interior of the housing into a vaporizing chamber and a fan chamber, a foraminous wall in said vaporizing chamber, means at the upper end of said foraminous wall discharging water thereonto, a collector below said foraminous wall, a fan in said fan chamber for drawing air through said foraminous wall and discharging the moistened air through one of said end walls, a swingable speed regulator for said fan, a valve member connected with said water discharging means, a vertical pitman, means rockably supporting said pitman in said housing, means slidably connecting one end of said pitman with said valve member, a horizontal pitman operating link, means pivotally connecting one end of said link with said regulator and the other end thereof with the other end of said pitman whereby adjustment of said regulator will simultaneously adjust the opening or closing of said valve member, a suction nozzle structure interposed between said valve member and said water discharge means, and a vertically disposed pipe connected with said nozzle and said collector for redischarge of the water entering said collector, said pitman supporting means including complementary clamping means engaging said pipe.

2,327,269. AIR COMPRESSOR. Sellers E. Jessup, Los Angeles, Calif. Application May 26, 1941, Serial No. 395,162. 5 Claims. (Cl. 230—231.)



1. A fluid compressor having a cylinder forming a compression chamber, a piston reciprocable in said compression chamber, said cylinder having a return check valve chamber of increased diameter and provided with an annular valve seat between said compression and valve chambers, and an outlet duct for compressed fluid from said valve seat, a piston return check valve, reciprocable in said valve chamber in cooperation with said seat controlling the return of compressed fluid into the compression chamber, said piston return check valve having an intake duct through the wall of said cylinder entering the compression chamber for fluid to be compressed, an intake check valve controlling the fluid entering the compression chamber through said return check valve, said return check valve chamber having a connection with said outlet duct by which compressed fluid is admitted into said valve chamber above the return check valve tending to close said return check valve upon said seat, and a check in said last mentioned connection for preventing the return of compressed fluid admitted into said valve chamber.

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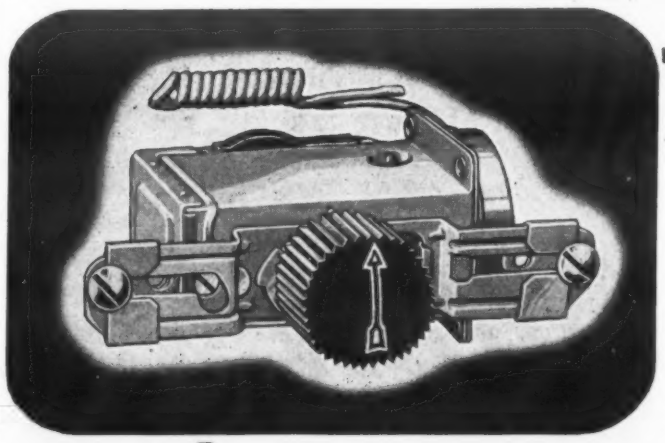
SOME MODELS ARE STILL AVAILABLE

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Curtail Draft Boards Authority Over Men With Critical Skills

(Concluded from Page 1, Column 2)

Board reverses it, the regulation did not say the boards will have to accept recommendations by the U.S.E.S. in every case, although they must accord consideration to them.

Although the occupational-deferment eligibility between the ages of 18 and 25 has been limited even if they hold "essential" positions in essential industries, there is no such limitation on the deferment eligibility of men in the 18-25 age bracket who hold one of the 149 "critical" posts, said Major Gen. Lewis B. Hershey, Selective Service head.

Service Employers Wise To Work With U.S.E.S

LOS ANGELES — Refrigeration service concerns can help their own case with government officials on the manpower shortage situation by working more generally with the United States Employment Service, in the opinion of L. P. Roth of Refrigeration Service, Inc.

"In checking over a list of critical occupations recently issued by the War Manpower Commission, the impression which we got from the information accompanying the list was that this list had been made up primarily from unfilled requests for help to the United States Employment Service.

"It suddenly occurred to us that service operators in this territory had not been making use of the U.S.E.S. in their attempts to hire experienced refrigeration servicemen.

"It seems obvious that their failure to do so would then lead the U.S.E.S. to believe that there was no shortage of refrigeration servicemen in this area; whereas, actually a very considerable shortage exists, which the industry has been attempting to fill through its own channels.

"Refrigeration service employers should make known their needs for servicemen to the U.S.E.S., thereby building up some shortage experience which would be helpful in gaining further consideration for the refrigeration service field as the manpower shortage continues to become more critical."

Mr. Roth's ideas are borne out in the detailed announcement made about the new War Manpower Commission program to provide "superdeferment" for certain critical occupations, including "refrigeration serviceman" and "refrigerator engineer." This announcement was published in the Sept. 6 Bulletin Edition of the NEWS, and some parts which were pertinent to Mr. Roth's points are the following:

"Local boards are to 'take into account not merely the national shortage of his skill (that is, of a man in one of the super-critical occupations) but available replacements for even unskilled workers and current local shortages of skilled or unskilled labor.' Closer collaboration is provided between the local Selective Service Boards and the offices of the U. S. Employment Service in making these determinations (Local Board Memorandum No. 115).

". . . While occupational deferment for necessary men has always been based on the judgment of the local Selective Service Boards, and will continue to be, an additional yardstick is set up for measuring the 'replaceability' of men in vital industry.

"In judging replaceability, the boards were instructed to consider (a) the shortage of the registrant's skill in the total labor force; (b) the shortage of workers to replace the man even though he is an unskilled worker; (c) a shortage in the place of employment even when no national shortage exists.

"Provision is made for close collaboration between the Selective Service Boards and the U. S. Employment Service offices for the exchange of manpower information.

"Workers in the newly announced group of 149 critical occupations may not be hired merely on the presentation of a statement of availability. 'Referral by' or the 'consent of' the United States Employment Service is required to employ them."

Sanger Will Manage Appliance Sales For G-E's A&M Dept.

(Concluded from Page 1, Column 3)

ing devices, fans, clocks, and sunlamps. As production of civilian goods was curtailed Mr. Sanger helped develop maritime specifications for equipment used in ventilating ships and worked closely with government agencies to conserve materials.

In peacetime the G-E appliance division includes refrigerators, ranges, water heaters, electric sinks and kitchen cabinets, home laundry equipment, vacuum cleaners, heating devices, clocks, fans, sunlamps, and electric blankets.

Mr. Sanger joined General Electric in 1930 as a radio specialist in Philadelphia after seven years with two Ohio firms as retail appliance salesman and wholesale sales manager. In 1932 G-E's appliance and merchandise department set up a Philadelphia district sales office with Mr. Sanger as district manager.

In 1939 he became sales manager of the domestic refrigeration section, headquarters office, then located at Nela Park, Cleveland. , In March, 1940 he was named manager of traffic appliances at Bridgeport, and when clocks were added to this group in 1941 he became a director of the Warren Telechron Co., Ashland, Mass., a G-E subsidiary.

Marshall B. Ross will now take charge of sales activities of the traffic appliance division, announced Vice President Andrews.

David Grimes, Philco Engineer, Killed In Crash Over Ireland

LONDON, England—David Grimes, vice president in charge of engineering for Philco Corp., was killed in an airplane crash in Northern Ireland Saturday, Sept. 4, which also took the lives of Commodore James A. Logan, commandant of the United States Naval operating base at Londonderry, and Loren L. Myles of Los Angeles, U. S. Army Air Force pilot.

Mr. Grimes, who was 47 years old, was abroad on a special war mission.

Following his graduation from the University of Minnesota, Mr. Grimes served in the last war as chief radio officer at Kelly Field, Tex., when the use of radio communications in warfare was just beginning to assume importance. From June to December, 1918, he was Signal Officer attached to the British Air Forces at Aldershot and Littlehampton, England.

After the war, Mr. Grimes joined the American Telephone & Telegraph Co. as a research engineer in telephony. In 1922 he established his own engineering organization to do research work on a consulting basis for a number of different companies. It was during this period that he invented the famous "Grimes Inverse Duplex circuit"

Mr. Grimes joined Philco in 1934 as engineer in charge of home radio set research and engineering, and continued in that capacity until 1939, when he was named chief engineer. In 1942 he was elected vice president.

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